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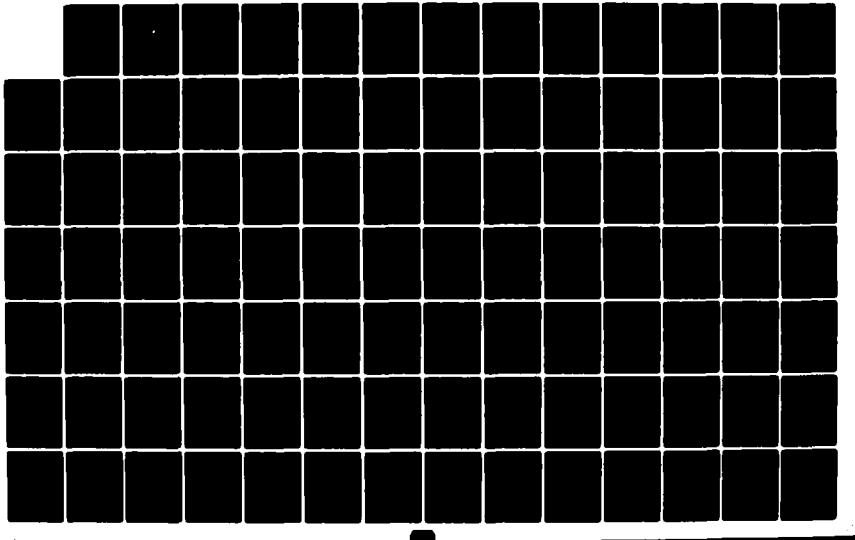

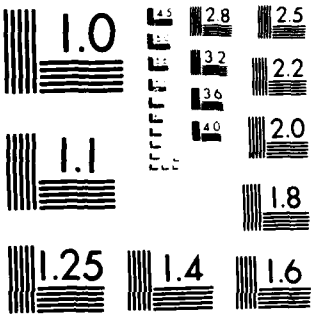

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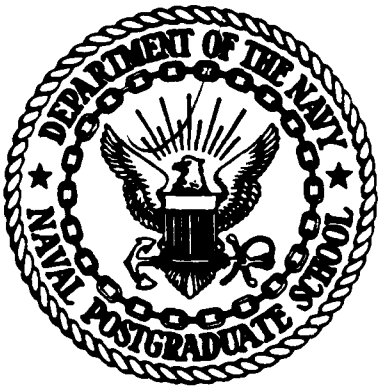

THESIS

EXPANSION OF THE SCAN ENDGAME PROGRAM FOR AIRCRAFT SURVIVABILITY STUDIES AND DEVELOPMENT OF A SUPPORTING USER'S GUIDE

by

Jean-Paul Fourny

December 1982

Thesis Advisor: R. E. Ball

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Expansion of the SCAN Endgame Program for Aircraft Survivability and Development of a Supporting User's Guide

by

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Submitted in partial fulfillment of the
requirement for the degree of

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ABSTRACT

This study involved a detailed examination of the aircraft survivability analysis program called SCAN, and modification of the pre and post-processing graphics programs that support the program. The aim was the improvement of the originally installed version of SCAN at NPS by incorporating the graphics commands for the new IBM supported terminals, by increasing the speed of the display process, and by simplifying the input data preparation by making it more interactive. In addition, a comprehensive User's Guide was prepared for use by NPS students involved in aircraft survivability/warhead lethality studies.

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LIST OF VARIABLES

VARIABLES	DESCRIPTION
Fragment Parameters	
VMIN(I)	Fragment velocity at lower Polar Zone Boundary
UMAX(I)	Fragment velocity at upper Polar Zone Boundary
ZONMIN(I)	Lower angle of Polar Zone
ZONMAX(I)	Upper angle of Polar Zone
XWH(I)	Distance from warhead center to inertial fragment position
Fuzing Parameters	
FUZPOS	Distance from TDD to warhead center
FUZANG	Fuze look angle
RADMSL	Missile body radius
POSNOS	Distance from contact fuze to warhead center
POSTAL	Distance from warhead center to aft end of missile
Blast Envelope Parameters	
FUSBLR	Fuselage Blast Radius
FUSBL1	Distance from target CG to front of blast cylinder
FUSBL2	Distance from target CG to rear of blast cylinder
WNGBLR	Wing Blast Radius
WNGPT1(3)	End Point of wing blast centerline nearest fuselage
WNGPT2(3)	End Point of wing blast centerline nearest wing tip

ACKNOWLEDGEMENT

I wish to express my appreciation to Professor R. E. Ball, Naval Postgraduate School, who provided me with direction and support throughout this study. I also wish to thank Mr. D. Marr, who provided guidance and insight into the IBM 3033 system.

I. INTRODUCTION

This thesis examines in detail the SCAN package of programs as originally installed at the Naval Postgraduate School with the aim of improving the graphics capability, speed and ease of use. It investigates some of the limitations of the NPS version in relation to its usefulnes as a supplement to classroom instruction on the aircraft survivability/lethality courses and describes the development of the resulting program additions and changes. In addition, the development of a comprehensive User's Guide for NPS students was undertaken.

A. OVERVIEW OF SCAN MODEL

To better understand the purpose of this study, a brief overview of the SCAN application is in order. SCAN provides an analytical means of assessing aircraft survivability against a specified missile threat. The encounter between an airborne target and a fragmentation warhead known as the endgame is mathematically simulated and impact computations are carried out for all fragments impacting a geometrical representation of the target. This type of model, as opposed to a fragment collector model, is less efficient and more time consuming since it computes all impacts, not just those at critical points. However, it has the distinct

advantage of allowing the analyst to experiment with shielding, component relocation, and extended vulnerable components. The added benefits of comparing results against real experimental data and providing a more realistic graphical display of the encounter are also possible. SCAN provides computations of survival probabilities, target hit distributions, and processes the data for statistical summary and/or graphical output. The actual structure of this model allows user options in defining target geometry down to specific component level, vulnerability criteria, warhead configuration, fuzing parameters, blast envelope parameters, and encounter conditions. For the purposes of this study, the target geometric and vulnerability descriptors are taken as predetermined and fixed for use by students. However, additional target models are available with special permission, and these can be modified by more experienced users. The primary features of this model as listed above, are summarized as follows:

1. Target Geometric Representation - Analytical equations characterizing the basic shapes are used in the model and combined to represent the component structure of the target. Both internal and external components can be modeled, and the information used to dimensionalize the components, is contained in the various target geometry files stored on disk. Figure I-1 illustrates the basic concept. A

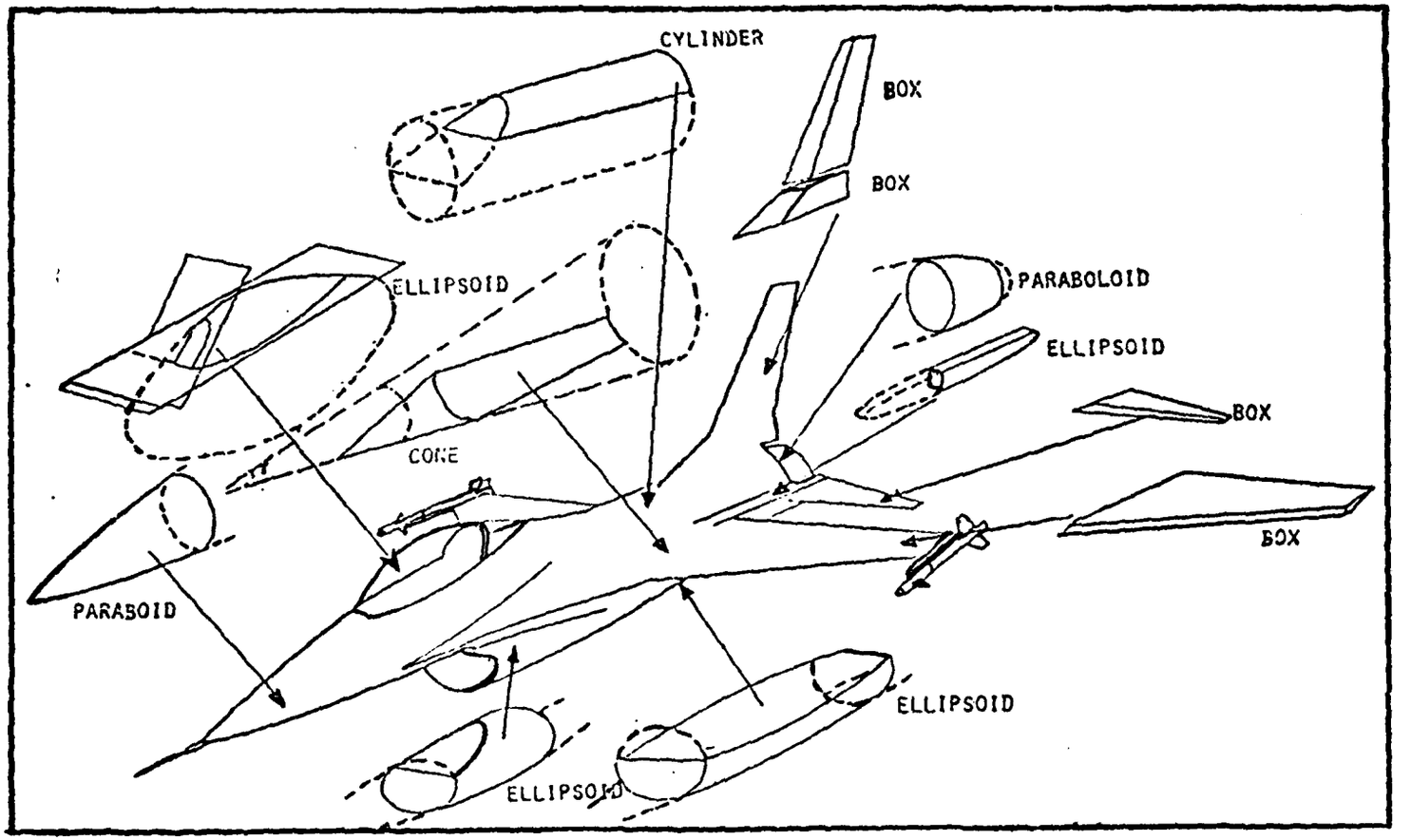


Figure I-1. Method of Target Modeling

detailed description of the geometric modelling is provided in SCAN, Volume I [Ref. 1] and an example of a geometry file is contained in the User's Guide, Appendix A.

2. Encounter Geometry - The modelling of the encounter scenario is done using four coordinate systems as depicted in Figure I-2. The features of primary importance include the kinematic and relational descriptors of the target and missile and the type of trajectory being simulated. The user has the option of specifying the miss distance of the missile at the time of detonation, or the miss distance from the aimpoint at the closest point of approach (CPA), with or without a Monte Carlo sampling specified by a circular error probable (CEP). Details of the encounter geometry modelling can be found in SCAN, Volume I [Ref. 1] and SCAN, Volume II [Ref. 2], and an example of the Case Data File is included in Appendix D.

3. Missile Representation - This feature is of primary importance to the student of a Warhead Lethality course, allowing him (her) the flexibility to redesign the missile warhead and fuze to a variety of specifications. Figures I-3a and b provide a pictorial representation of the warhead and fuze parameters used in the SCAN model. The warhead data file is also used to dimensionalize a blast envelope around the target, which can be extended or reduced by the user. The mathematical development of the damage mechanisms resulting from these parameter settings is

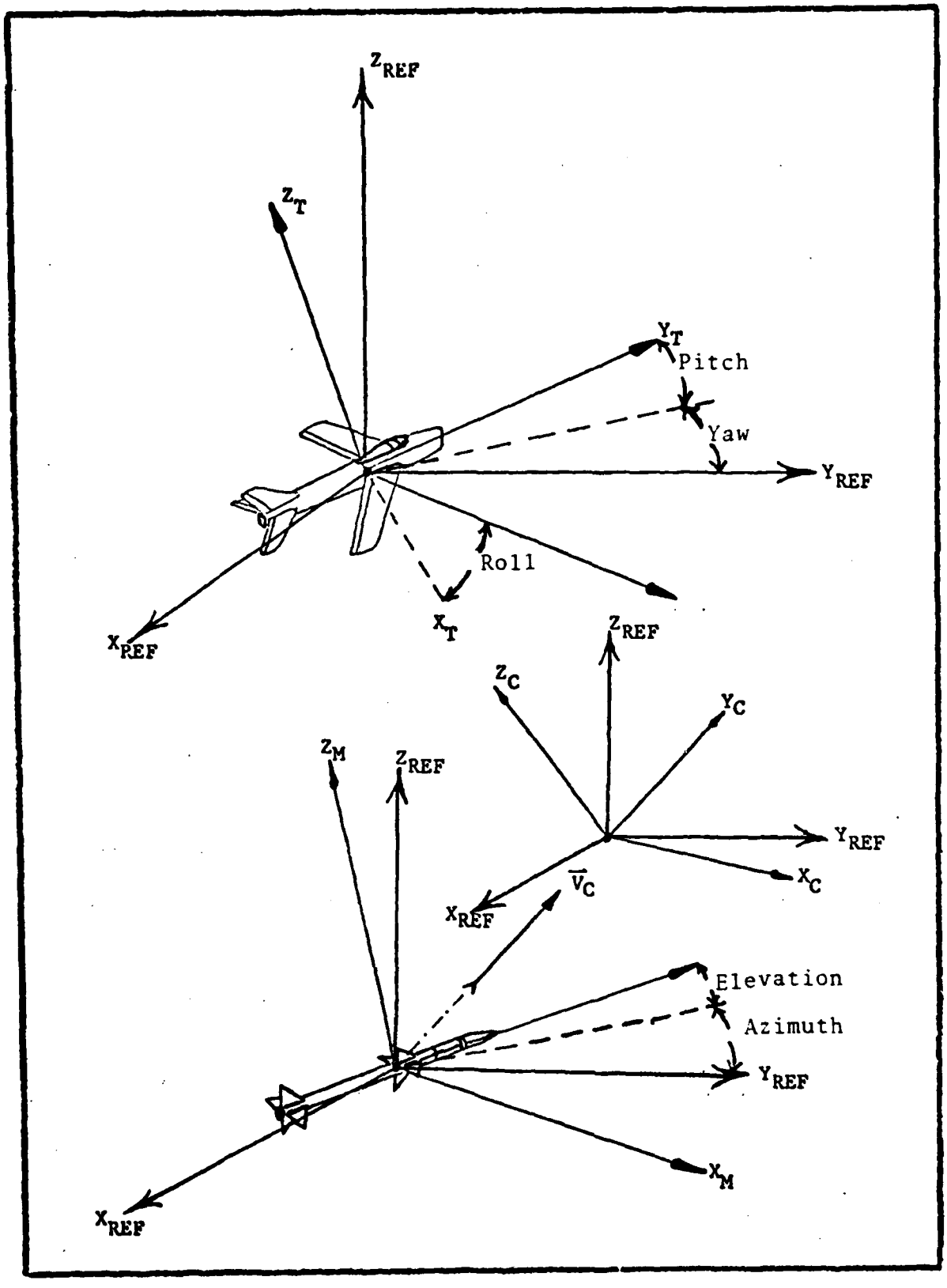


Figure I-2. Coordinate System Representation

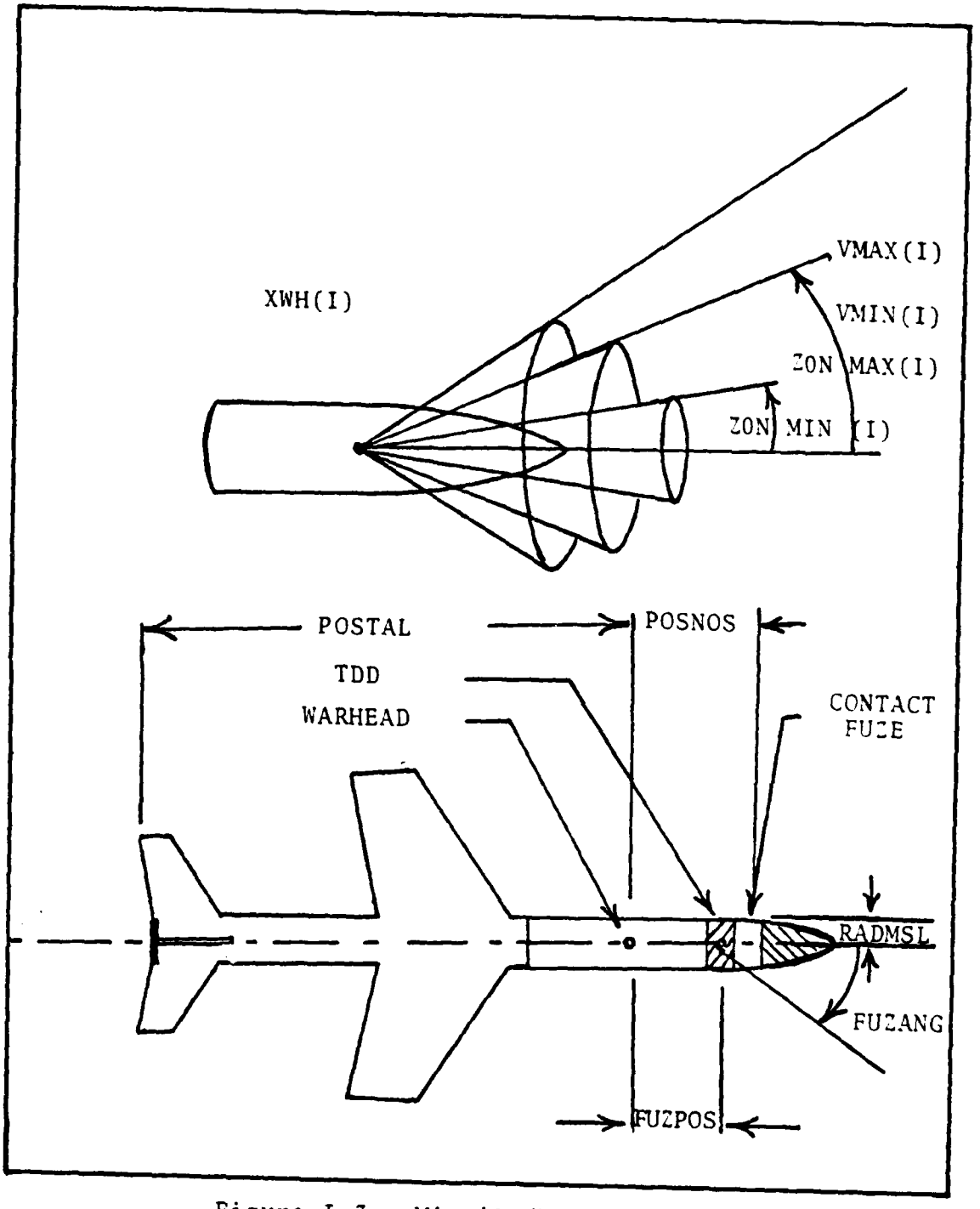


Figure I-3. Missile/Warhead Representation

thoroughly treated in SCAN, Volume II [Ref. 2]. A detailed description of these parameters and their interaction can also be found in [Ref. 3] and [Ref. 4]. The model for the blast envelope around the target is pictorially represented in Figure I-4.

B. STRUCTURE AND DESCRIPTION OF PROGRAM CHANGES

The structure of SCAN consists of three separate computer programs written in FORTRAN and developed at the Pacific Missile Test Center: SCANMAIN; SPLGEN and SPDRAW. SCANMAIN is the primary program and provides the actual analytical assessment of aircraft survivability against a specified missile threat. The program was installed at the Naval Postgraduate School in 1980 by Lieutenant J. Parr [Ref. 5]. The program is well documented and the support literature is abundant and current. The two graphics support programs installed at NPS are SPLGEN and SPDRAW. SPLGEN is the graphics pre-processor which accepts as inputs the target geometrical file and generates a target vector file for SPDRAW. SPDRAW accepts as input the target vector file from SPLGEN, and optionally the target impact file from SCANMAIN, and processes the data for graphical output based on user selected options. These two programs were installed at the Naval Postgraduate School in 1981 by Lieutenant Commander T. M. Hayes [Ref. 6]. Changes to these two programs and the creation of two file manipulation programs and an

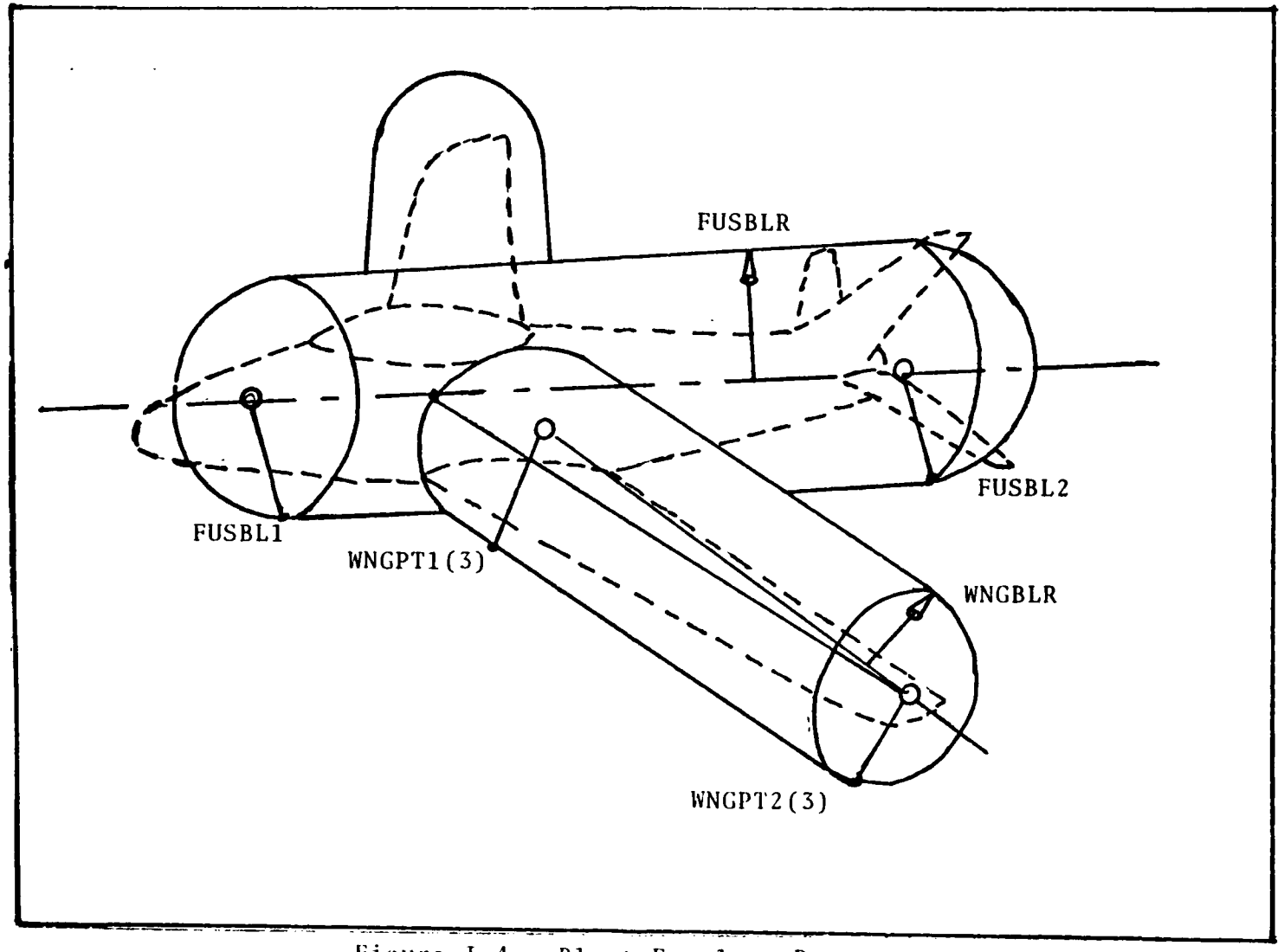


Figure I-4. Blast Envelope Representation

interactive control executive program were the major part of this thesis research.

Under the CMS timesharing system used at NPS, executive files can contain CMS or CP system commands or EXEC control statements and can be written and tailored to control special applications. Many of the burdensome system tasks required of a user can be eliminated by developing such a file as a control executive. This was done for the SCAN package at NPS and named NPSCAN. Figure I-5 summarizes the system commands required by the user on the original NPS version to run the entire application and the reduction of system commands to one on the revised version.

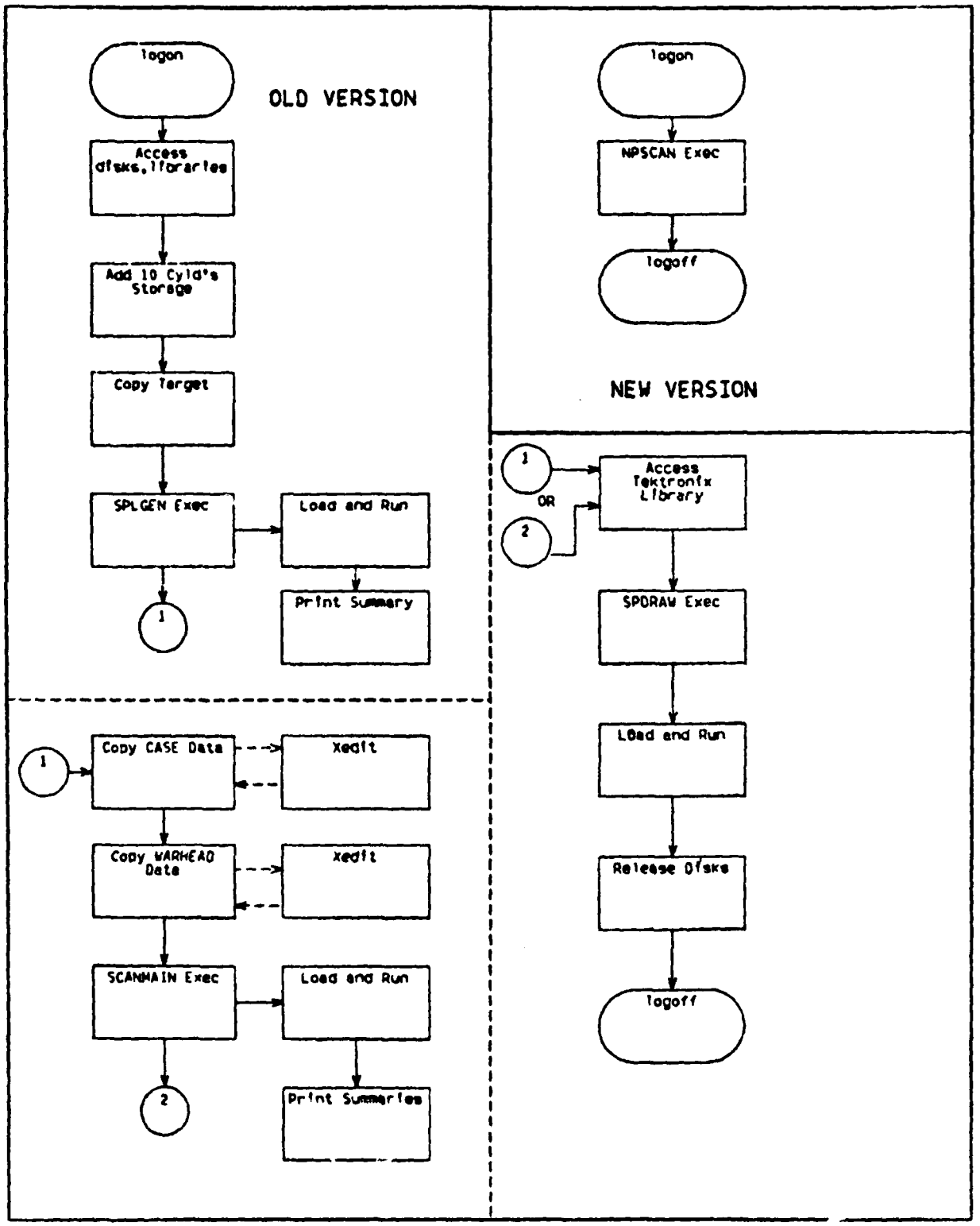


Figure I-5. Comparative Flowchart of User Required System Actions

II. ANALYSIS OF SCAN

A. NPS SCAN PACKAGE LIMITATIONS

The original SPDRAW program was written in FORTRAN for the CYBER computer and used a PMTC graphics system dependent language to drive the particular graphics terminal at Point Mugu. Appropriate changes were made to the program when initially installed at NPS to make it compatible with the IBM 3033, and the graphics commands were translated to PLOT10 languages for use on the Tektronix 4012 and 4081 Terminals. Since its installation, the School has acquired the new IBM Dual Screen Management workstations utilizing the IBM 3277 keyboard terminal and the Tektronix 618 graphics terminal. The DSM stations use the software dependent GRAF 77 language package and can also be driven by the ISSCO Telegraph or DISSPLA software packages. The SPDRAW PLOT10 commands were translated to the GRAF 77 primitive commands as part of the thesis effort. In addition, some of the original code was changed. These changes resulted in four advantages over the original version. These advantages are:

1. Increased Speed
2. Increased Flexibility
3. Increased Accessibility and
4. Improved Graphics Support

The specific subroutine changes and additions resulting from this translation are contained in Appendix C.

When the initial familiarization and program examination of SPDRAW was being undertaken at the beginning of the research period, the graphics plotting speed was noted as being extremely slow for a computer generated image. A small improvement in plotting time was noted when the translation to GRAF 77 was finished, mainly due to the utilization of hardwired terminals (9600 baud) vice a modem connected terminal (1200 baud). After further examination of the program logic, the discovery was made that the SPDRAW line generation routines were calculating individual vectors, checking their validity, and then plotting the single vector before going on to the next vector calculation. A similar procedure was followed for the target (fragment) impact file. To improve this situation, two additional storage files were added to the control executive and introduced into the generation routines to store all calculated data points prior to any plotting. In the revised application, all vectors are first calculated and stored. On completion of all calculations, the total file is sequentially plotted in one step. Additional information on this new procedure is provided in the design section, and the results are discussed in Chapter III.

Students at NPS, as with users in any environment, can possess widely differing computer experience. Lack of experience can adversely affect the ability of a user to successfully implement an application. For this reason, an interactive program should take into account the diverse backgrounds and make allowances for the inexperienced user. An important parallel to this concern is the experience of the user with the application itself, which must be taken into consideration if accessibility is to be given to students whose time is limited, whose familiarity with the topic is non-existent until the time of the course of study, and whose opportunity to use the program will be limited to a few weeks at the end of a course. The time factor is particularly important in view of the fact that SCAN is an extensive and complicated application. Running the three original programs required extensive reading by the author, which brings up another limitation of the SCAN package of programs, the lack of comprehensive documentation. Various components of the package were documented in different manuals, with the majority of the documentation on SCANMAIN. For example, Fair [Ref. 3] discusses the structure of the warhead and case data files and provides insight into the manipulation of these files for user defined encounter scenarios and warhead parameters. Hayes [Ref. 4] provides a useful guide for the control of

the complete application and summarizes the function of SPDRAW, including a descriptive listing of the available commands and user options. Specific examples are provided in Hayes' thesis, as well as documented results of a specific analysis carried out to demonstrate SCAN's capability. Prior to this thesis, no attempt has been made to compile these various sources into a comprehensive guide. This fact and the previously listed limitations, were all taken into account in the design and development of the resulting program changes and additions to be discussed in the next section.

B. DESIGN AND DEVELOPMENT OF PROGRAM CHANGES

As stated in Section A, the design of an interactive application should take into account its intended user's familiarity with computers, as well as their understanding of and experience with the application itself. Since familiarity with a package is dynamic and not static, and regular users quickly pass from a beginning stage to more demanding users, stepwise learnability was incorporated into the design changes applied to the NPS version of SCAN. The concept of stepwise learnability breaks up the amount of information the user must assimilate into a series of steps [Ref. 7]. Three distinct levels of interaction were decided upon during the development of the changes. The

following levels were incorporated in SPLGEN, SPDRAW, and the new control executive program NPSCAN;

1. Novice
2. Intermediary
3. Experienced

Simplicity was a key issue in the design of the control executive. At the same time, meaningful results were desired with minimal prerequisite knowledge. In order to maintain simplicity and clarity without sacrificing efficiency, the first design decision was to develop the control executive such that all administrative and technical requirements to run the programs would be handled automatically, requiring minimal computer experience by the user and eliminating the problem of bothersome typing errors. The application simplification is clearly depicted in Figure I-5. To maintain clarity, programmed instructions were provided at all levels of interaction, and the User's Guide was organized into segments corresponding to each user level to provide expansion and further explanation of these instructions. No more information than was required at each level was provided so as not to burden the user with confusing detail. To ensure efficiency was not sacrificed using this approach, each section in the application was restructured to provide a varying degree of sophistication and complexity dependent on the user level.

Minimal changes were required in SPLGEN, since the only interaction provided was for line density settings, target size extension, and debugging print switches. Setting the debugging switches provided for the Intermediary and Experienced level as an option rather than an annoying requirement. The option was not offered to the Novice level, and switches are automatically set to default. Line density option was reduced to a simple choice of normal or high density and is offered to all levels of user. The size extension setting was completely eliminated and is now automatically provided from within the Control EXEC and passed to the program as a self-loading parameter.

The SCANMAIN program is completely non-interactive, but the input data files to this program are of primary importance to the user. They are, in fact, the tools available to the user for exploring the capabilities of SCAN and for carrying out useful analysis. Their importance cannot be overemphasized, and the contents of these files should provide realistic specifications for the missile and target. A standard default file of each type (missile warhead, target, and case) was prepared and they are presented in Appendix D. These default files are automatically loaded at the Novice level in order to allow the user to proceed with the application

without having to prepare any input data. The Intermediary level user is provided with the choice of selecting the default files, or creating and utilizing custom files. Two programs were developed for this purpose; each program allows the user to change the primary descriptors within each file interactively and provides instructive messages and selective branching options. At the Experienced level, the user is allowed complete freedom of choice in manipulating the data files through the CMS XEDIT feature incorporated into the control executive. Guidance for manipulating each descriptor is provided in the User's Guide given in Appendix A. Details of the two file manipulation programs, are contained in Appendix B and are flowcharted in Figures II-1 and II-2.

The principle interactive program within the SCAN package is SPDRAW. This program underwent several modifications during the progress of the thesis. As outlined in Section A, translation of the graphics commands was the initial change, followed by the later amalgamation of both PLOT10 and GRAFF 77 into the same program, to allow the user the choice of terminal types. These changes are detailed in Appendix C.

The next change to SPDRAW was the restructuring of the line generation routines to enhance the speed of the graphics display process. This change required the addition of two temporary storage files to the file

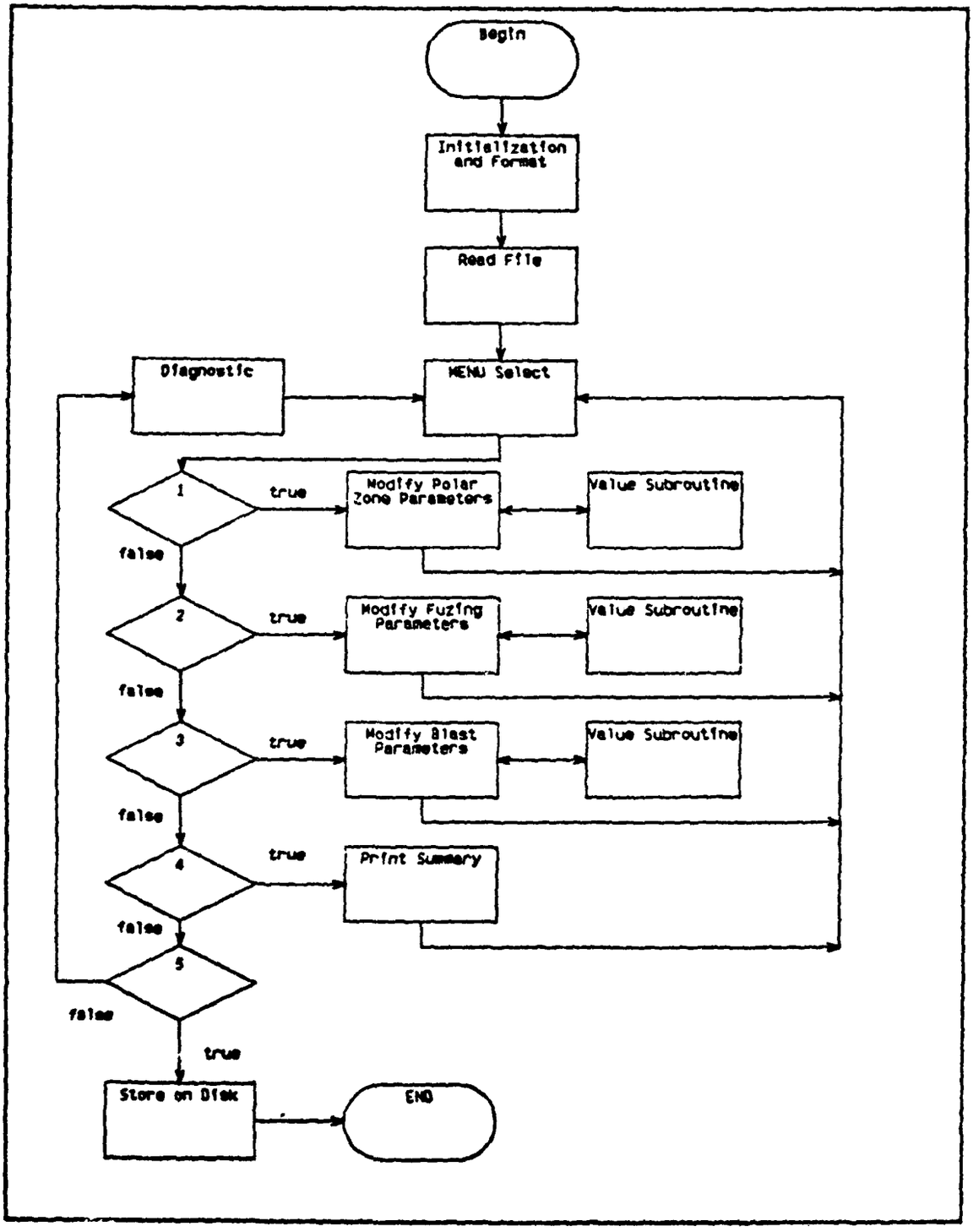


Figure II-1. Warhead Interactive Program Flowchart

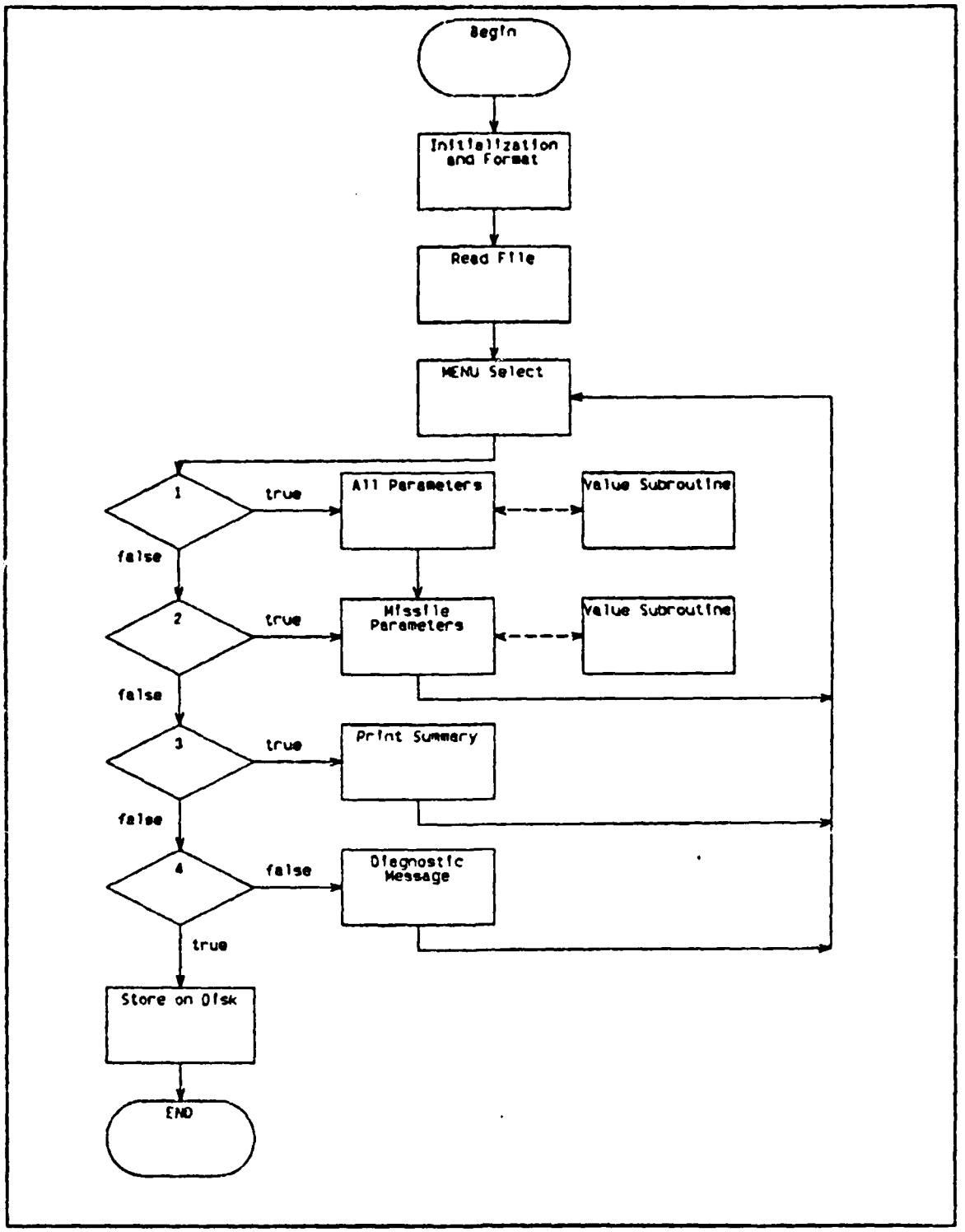


Figure II-2. Case Interactive Program Flowchart

definition for SPDRAW. A flowchart depicting the sequences of actions for the original and new version is found in Figure II-3.

The major additions and changes to SPDRAW were made to accomodate the three levels of user. The breakdown of command and option parameters for the three levels are shown in Figure II-4. The Novice level is provided with simple graphical capability including axes and fragment impact plotting. Control actions are provided through function key selection, with some numerical data entry. The Intermediary level user is provided with increased flexibility and options, while simplicity of selection is maintained using function keys and basic numeric data entry. The Experienced level user is provided the complete spectrum of graphic commands and options with control being maintained through more flexible typed command and option descriptors. All levels of user are provided with instructive messages, menu selection, diagnostics, and access to a newly written dynamic screen subroutine. This subroutine allows display manipulation without reentering a new PICTURE command. Details of this subroutine are flowcharted in Figure II-5. Additions and changes to SPDRAW are provided in Appendix C.

Another major contribution was the development of the control executive to replace the five original execs used with the NPS version [Ref. 4]. These five

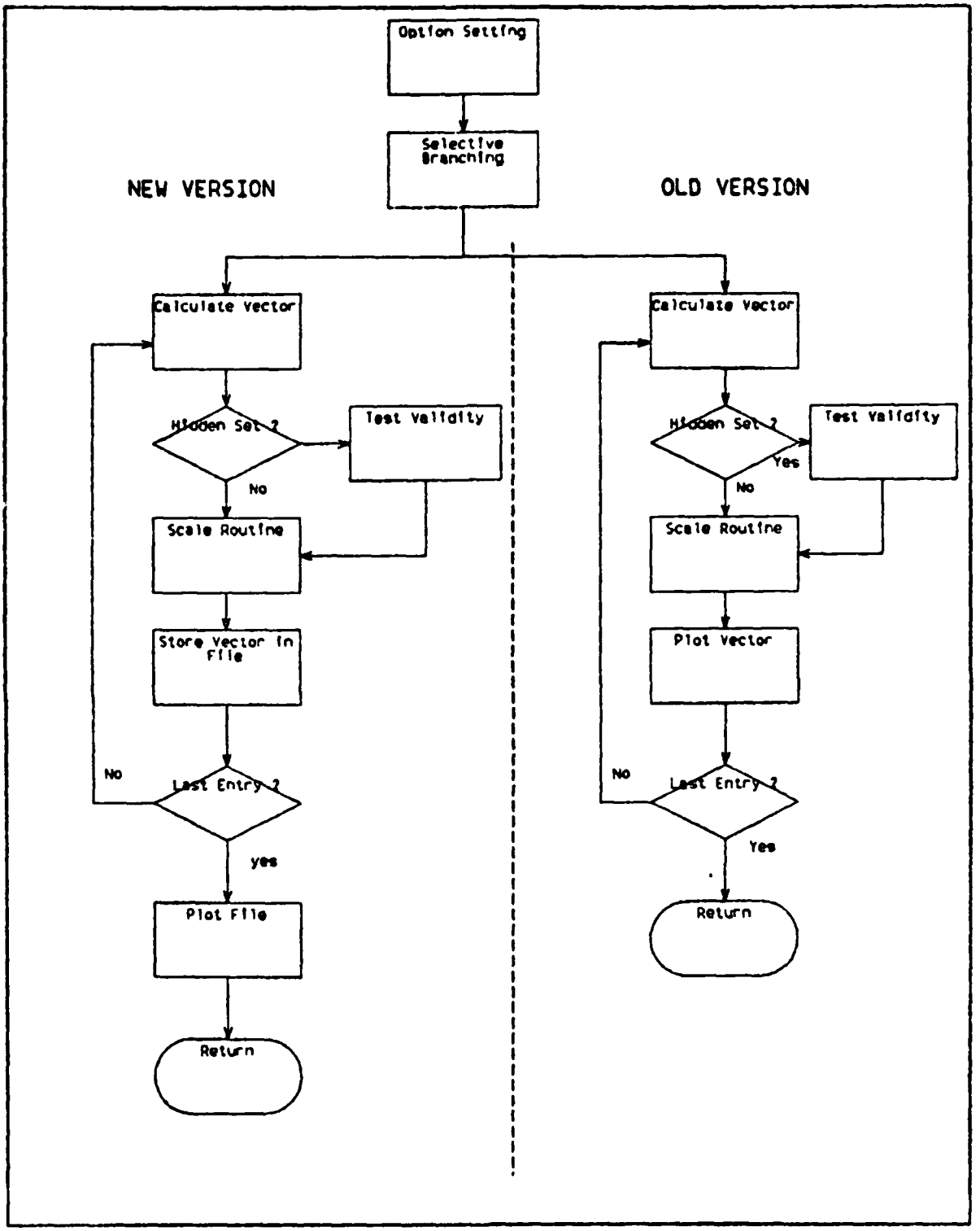


Figure II-3. Comparative Flowchart of Vector Plotting Sequence

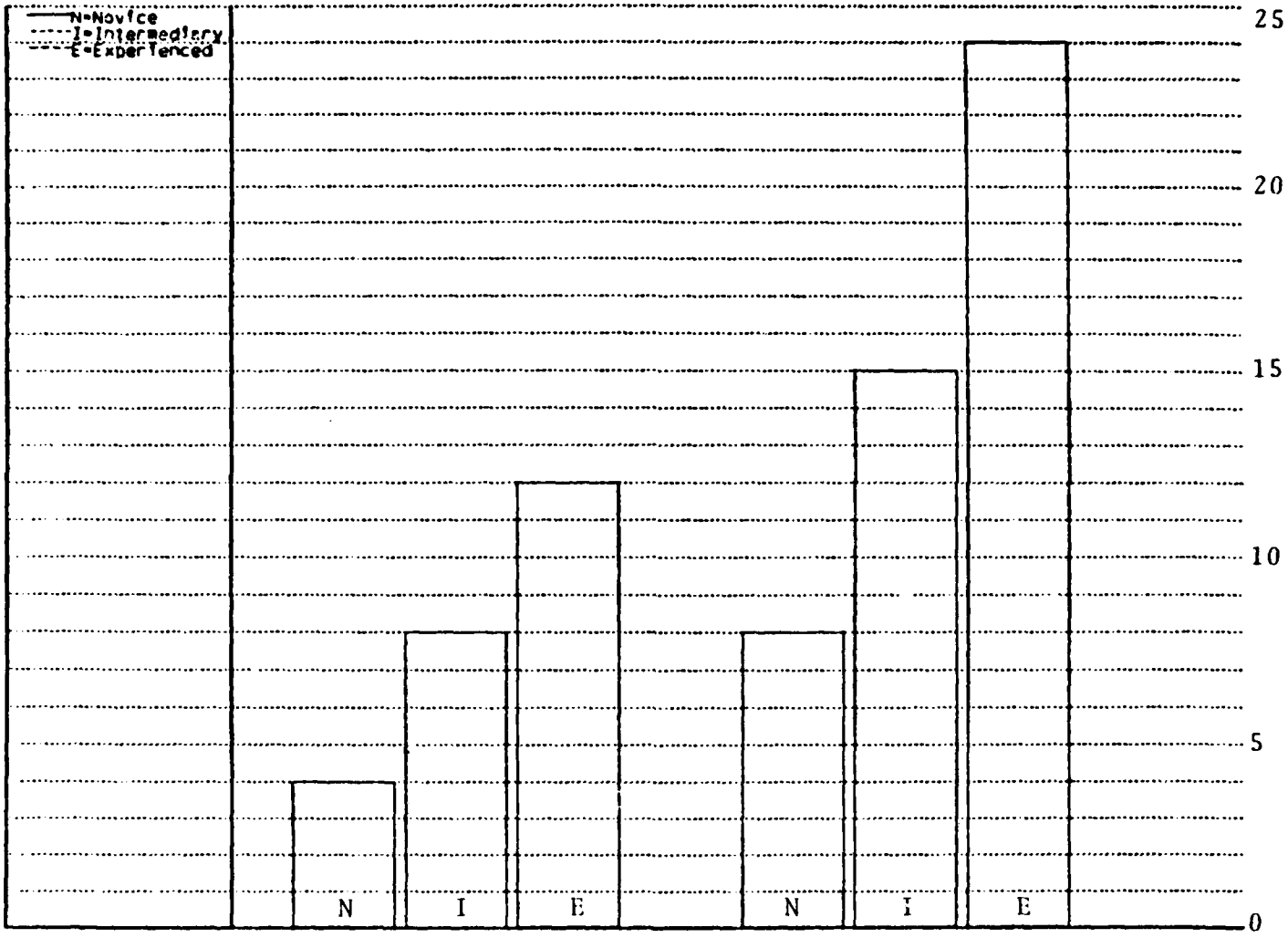


Figure II-4. User Level Accessability to Commands and Options

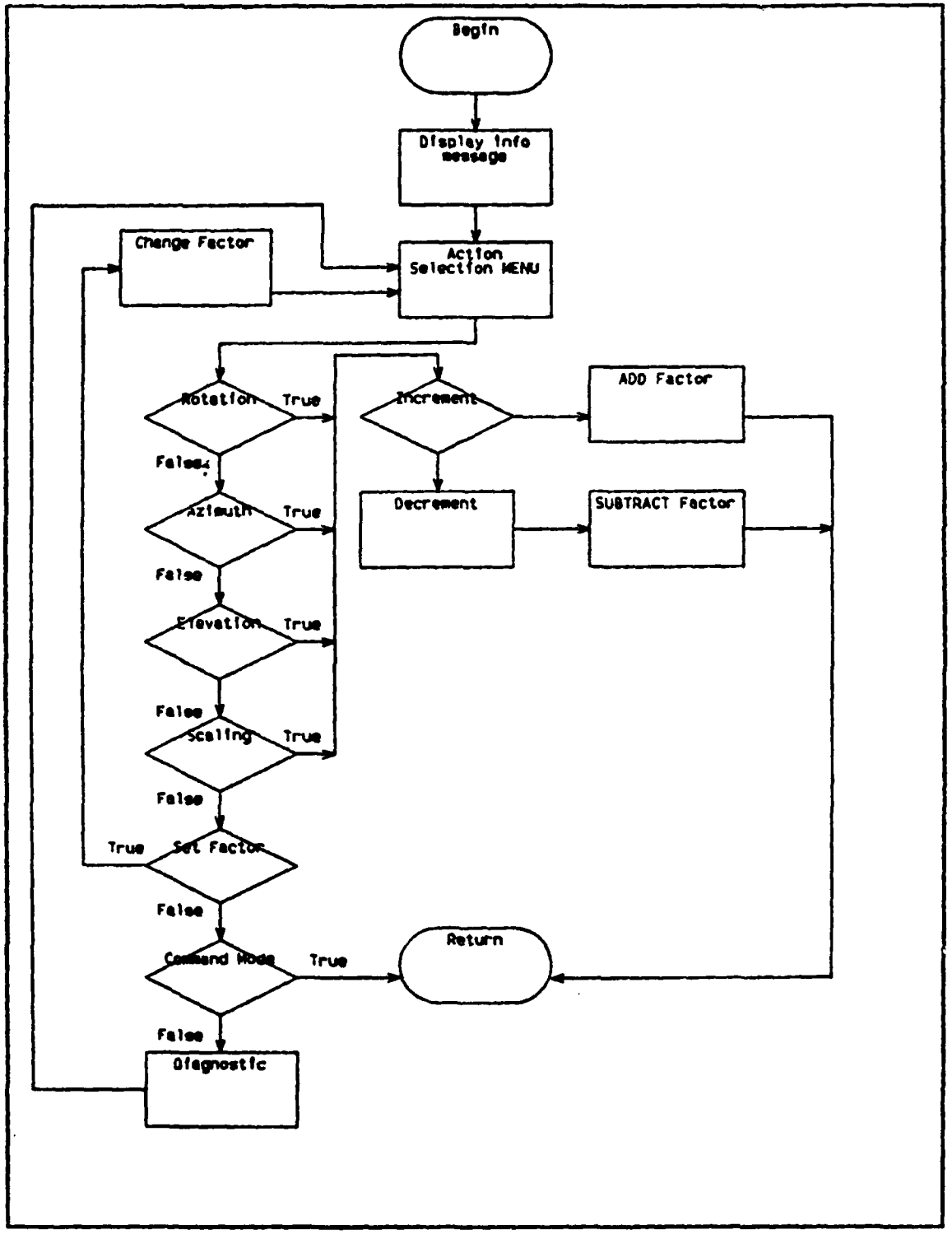


Figure II-5. Flowchart for Display Change Subroutine

programs ranged from three lines of code to ten lines of coce and provided the file definitions, global statements, and loading commands for SPLGEN, SCANMAIN, and SPDRAW. The new version, called NPSCAN, is ten pages in length, contains five hundred lines of code, and is designed to be completely interactive. The exec is written to encompass two (three with further expansion) graphics languages and a variety of graphics displays. It can also be used with the standard non-graphical terminals to provide statistical data only. It provides the user with maximum flexibility but requires minimum user knowledge of the system by providing automatic program control, three levels of interaction, and self-helping instructions and diagnostics throughout the application. The flowchart for NPSCAN is depicted in Figure II-6, and details are contained in Appendix B.

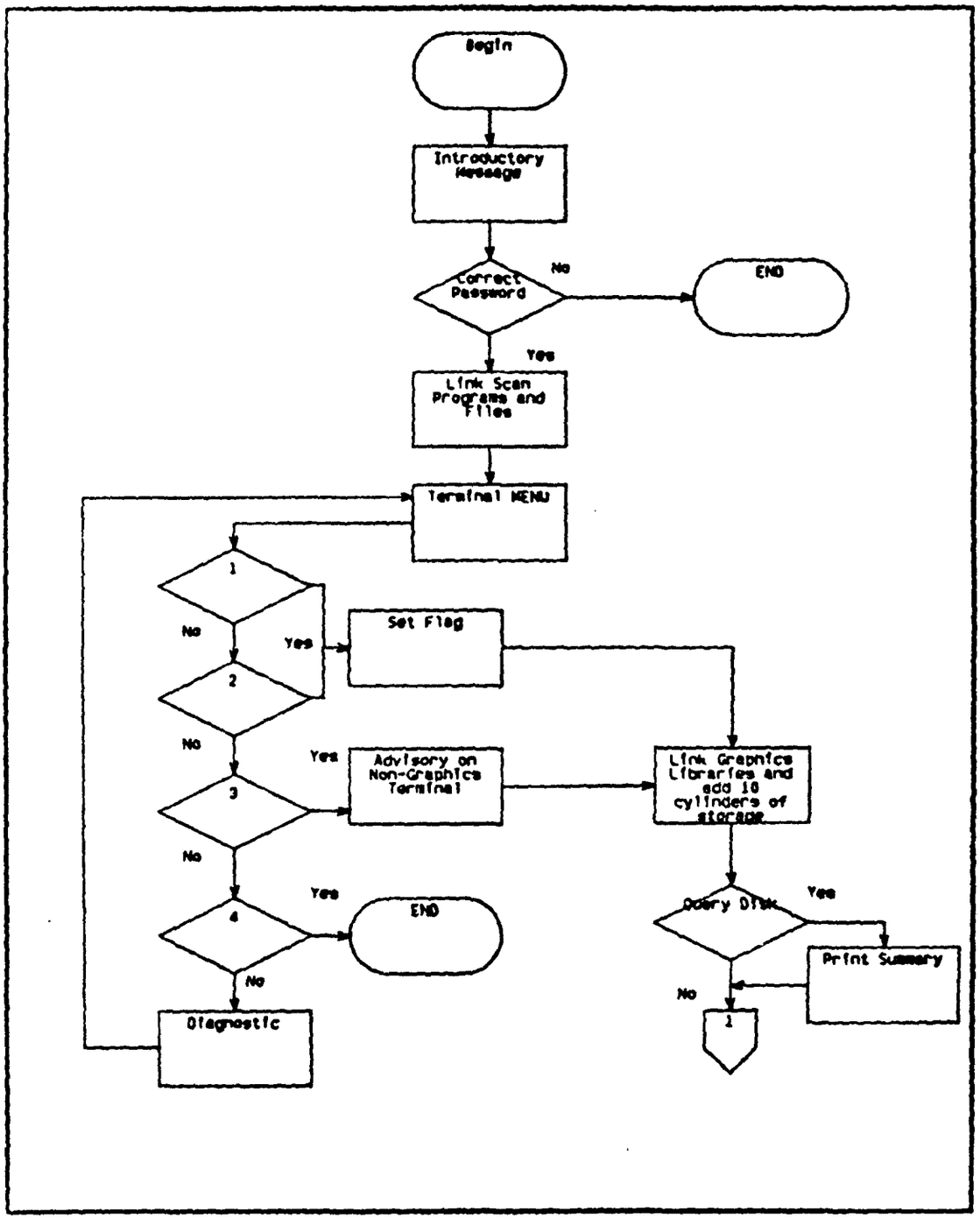


Figure II-6. NPSCAN Executive Flowchart

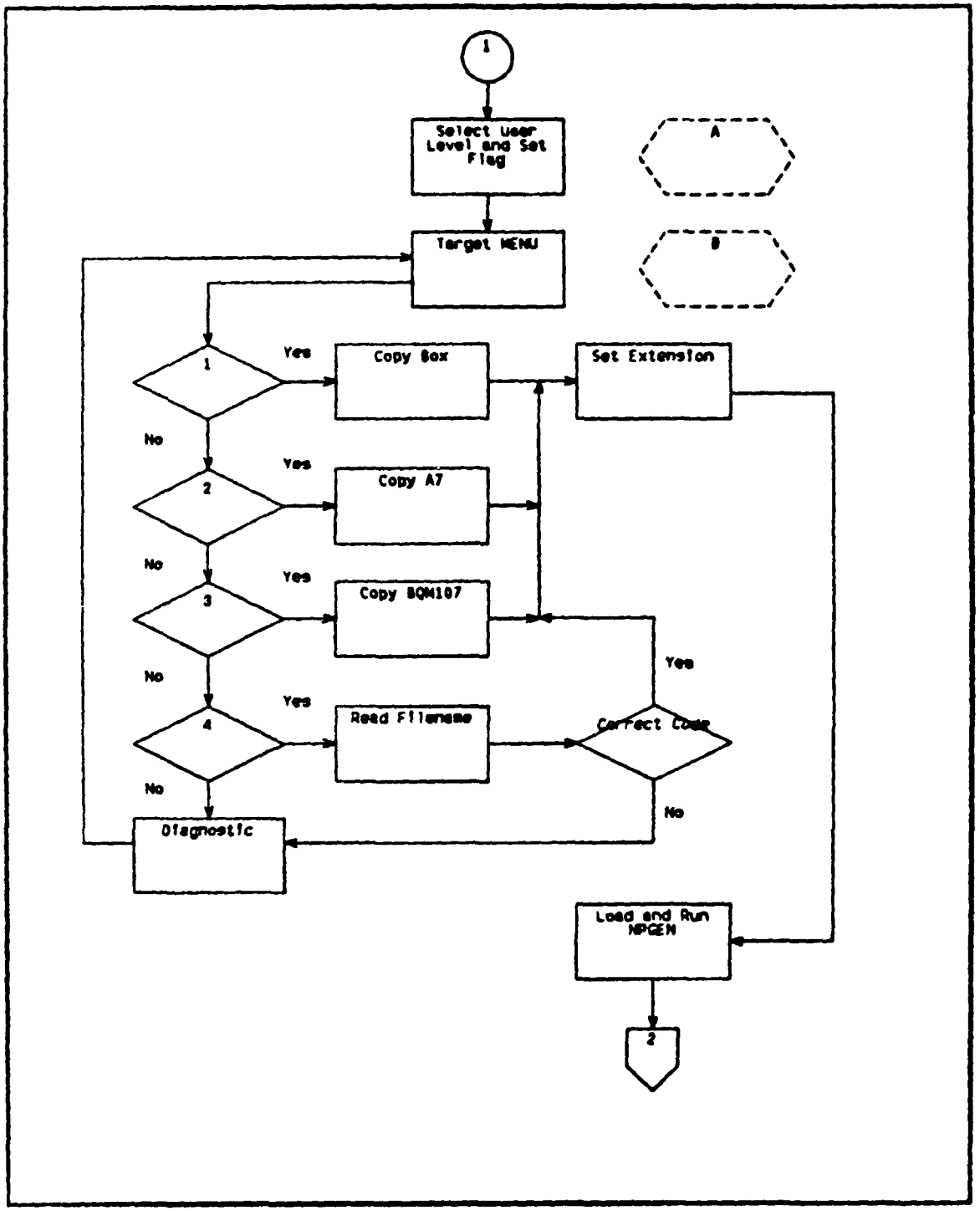
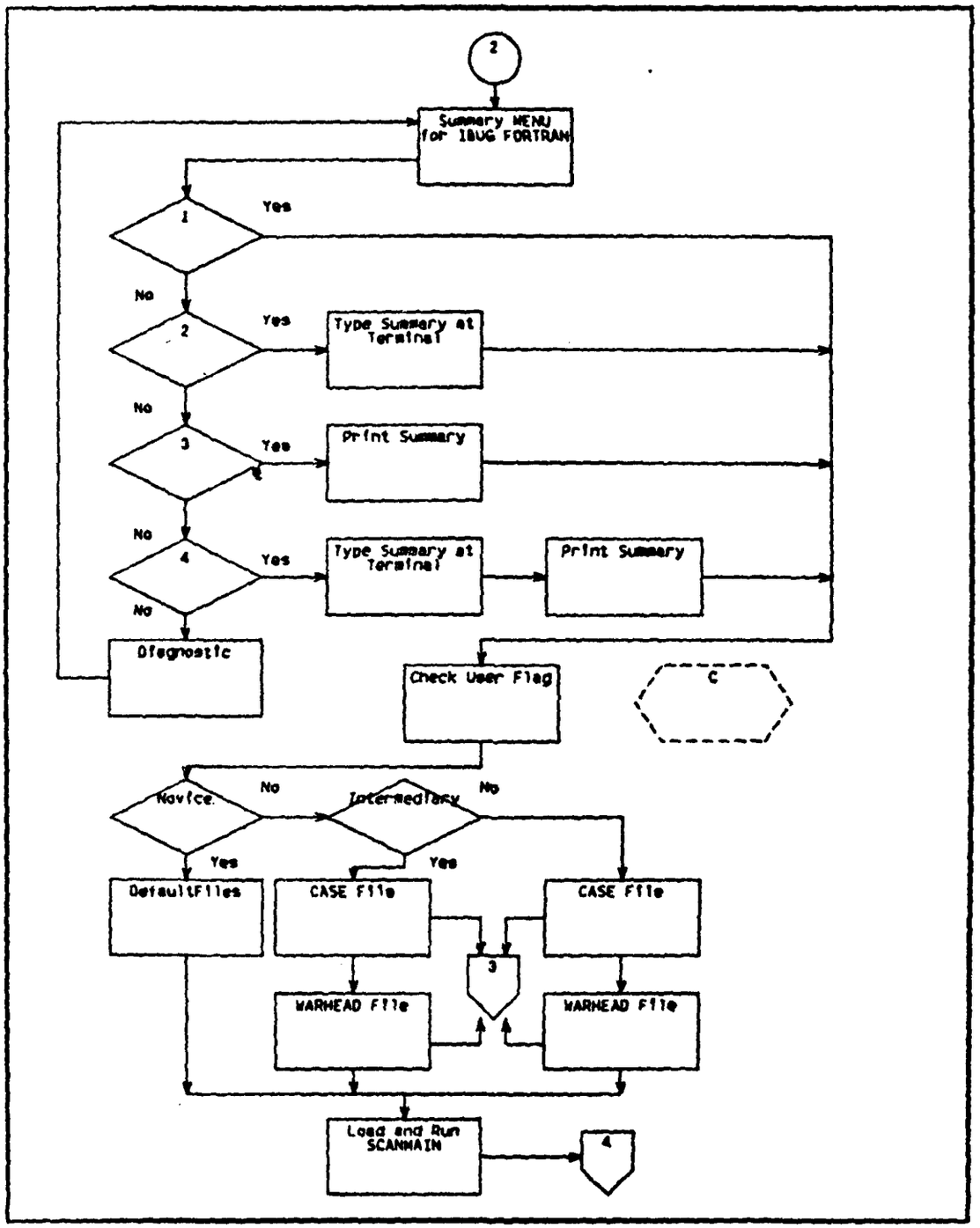


Figure II-6. (Continued)



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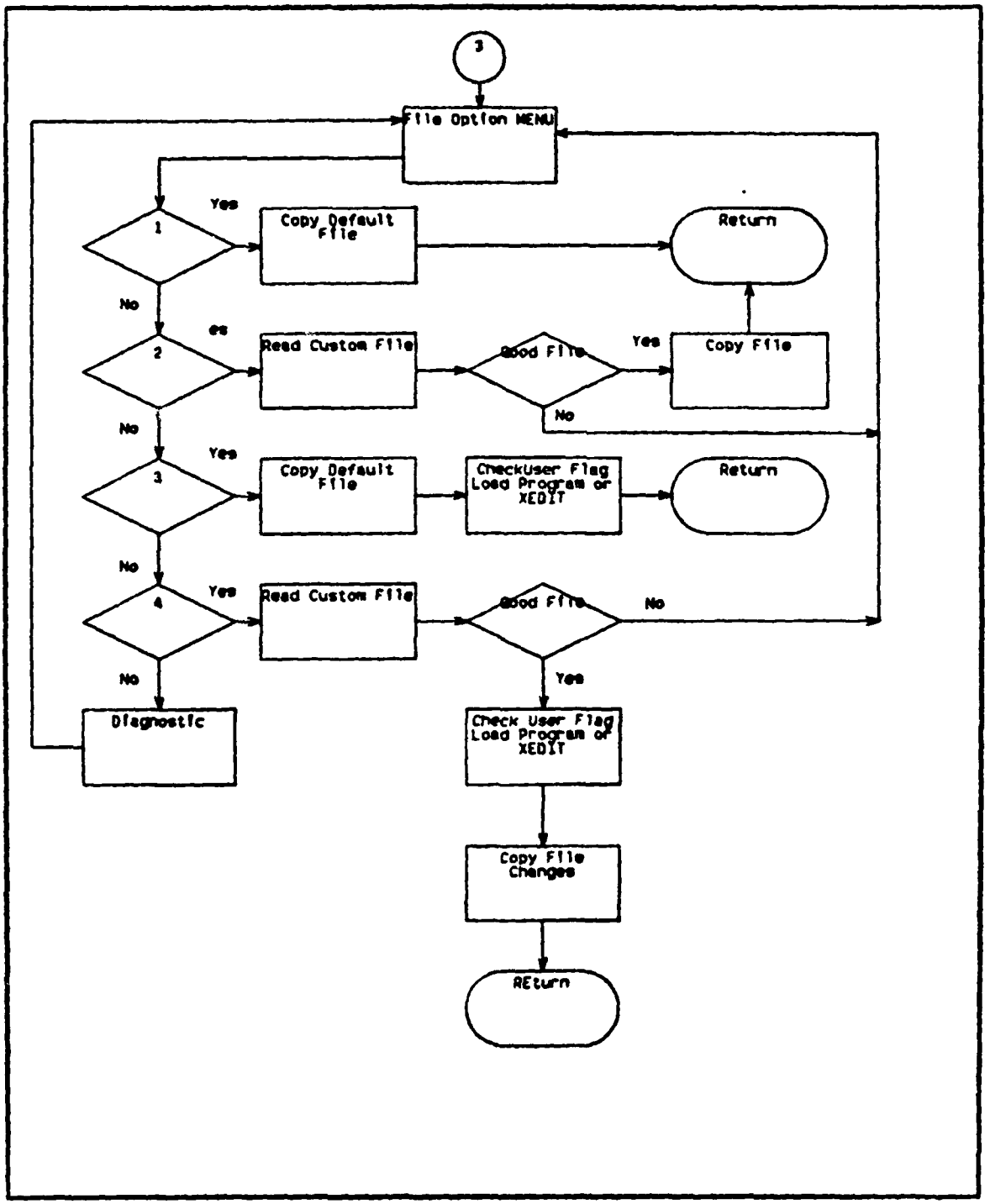


Figure II-6. (Continued)

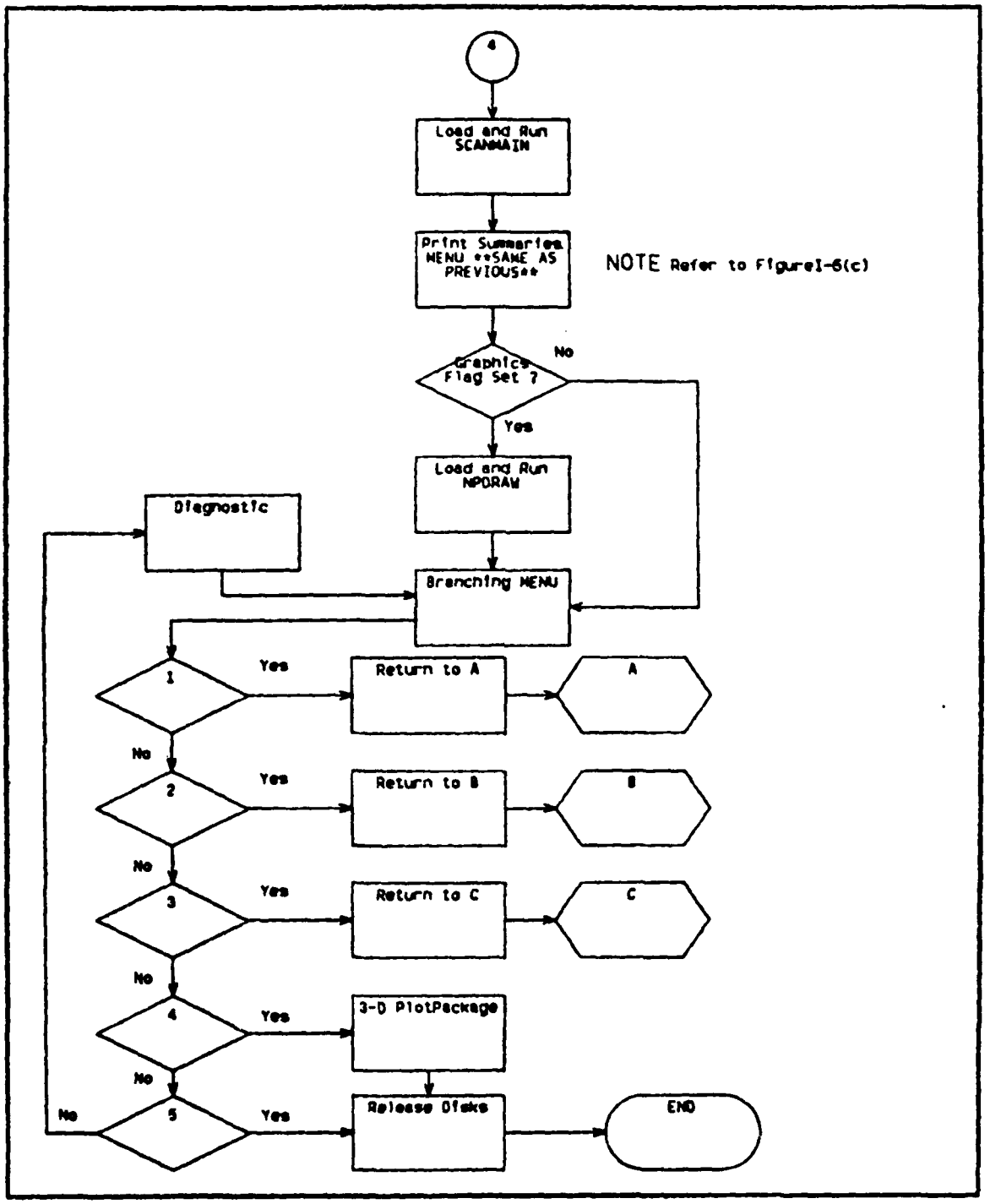


Figure II-6. (Continued)

III. RESULTS AND CONCLUSIONS

The SCAN package of programs is a valuable tool to the Endgame analyst, and with the changes and additions to the NPS version, should provide a useful and easy to use supplement to the Warhead Lethality and Aircraft Survivability courses taught at the School. The objectives of this study outlined in the Introduction were achieved and a summary of the results is given below.

Translation of the graphics commands to GRAF 77 resulted in four advantages. First of all, additional flexibility with the addition of a new language is evident by the increased useability, not only at NPS, but at other institutions. Second, accessibility at NPS is improved because of the large number of new IBM terminals that were acquired for the NPS system. Third, increased data transmission speed over that of the modem connected terminals was achieved since all IBM terminals are hardwired. Fourth, improved graphics support available for the new system terminals, although not optimal at present, will increase and improve as the system matures.

Restructuring the vector generation routines to calculate all values before commencing the plotting sequence had a significant effect on the speed of the

display process. An example of some of the observed time differences is as follows: display of a simple box target using the old version, PLOTIO (1200 baud terminal) was 69 seconds; the new version GRAF 77 (hardwired) used 1 second; for a complicated A-7 target display, the old version took 257 seconds; the new version took 24 seconds (these times include the fragment impact and axes generation). Testing times were taken during non-duty hours when computer usage was not heavy.

Development of three user levels will ensure that SCAN can be used to obtain desired results with minimum prerequisite knowledge and to provide flexibility and increased sophistication for the more experienced user. A breaking-in period of application usage by non-experienced users is necessary in order to assess effectively the achievement of this aim. Further refinement may be required at a later date after the revised version has been implemented and used.

The objectives of simplicity, clarity, and efficiency were achieved through the development of NPSCAN Control Program and the file manipulation programs. User knowledge of the computer system has been minimized. The addition of instructional messages and diagnostics to all interactive segments should prove useful even to the most seasoned users of SCAN.

The documentation that was compiled will provide each level of user with only that information that is necessary at that level and will eliminate the need to research additional sources, except of course in the case of the more advanced users.

One final note is concerning the research done to translate the graphics commands for DISSPLA and implement its use in the application. A custom executive was designed and incorporated into the Control Exec and used successfully in running a simple test program. When it was more carefully analyzed, it proved to be unsuitable for an interactive program such as SPDRAW, and was discarded, However, its use in development of a 3-D Plot Package at the conclusion of the application session could prove most useful and is recommended for further research.

APPENDIX A

NPSCAN USER'S GUIDE

SECTION

I. GENERAL DESCRIPTION

A. Introduction

NPSCAN refers to the Naval Postgraduate School version of SCAN and specifically represents the control executive used to drive the application programs herein referred to as:

1. SCANMAIN - Survivability assessment program
2. NPGEN - Graphics pre-processor
3. NPDRAW - Graphics post-processor
4. PROG1 - Interactive case file magnipulation program
5. PROG2 - Interactive warhead file manipulation program

SCAN was originally developed at the Pacific Missile Test Center for the purposes of analyzing aircraft survivability to missile threats and providing detailed damage estimates down to the component level. Users of the NPS version have access to three target models and with special permission can obtain codenames for additional models. Figures A-1 and A-2 depict a 3-D view of the A7 and BQM107 models that students can work with. In addition, a simple BOX model is provided and is recommended for first time users to familiarize themselves with the commands and options in NPDRAW. It should be noted that BOX has external components only. Figures A-3 and A-4 depict an internal representation of the A7 target and its computer generated counterpart.

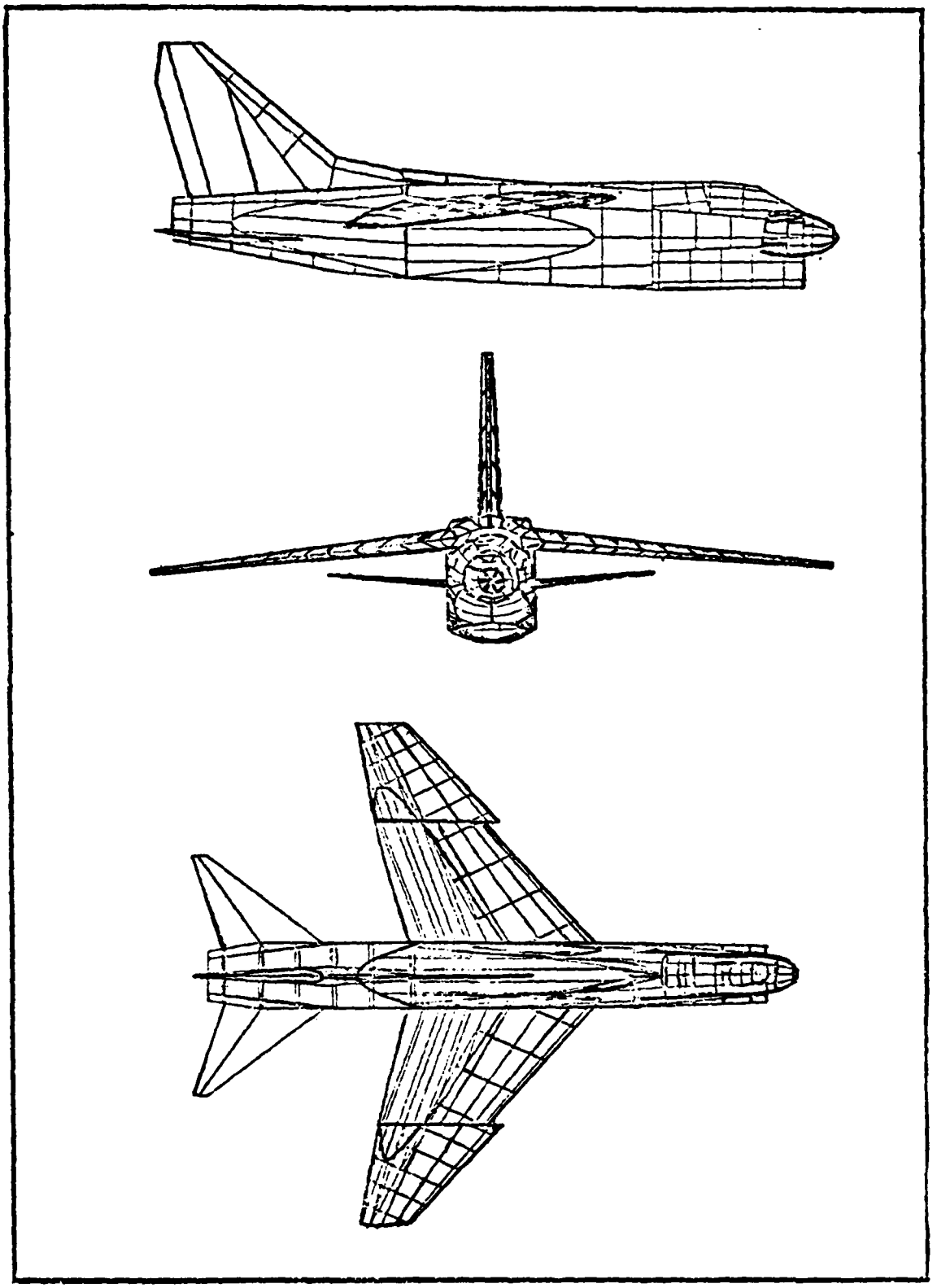


Figure A-1. 3-D Representation of A-7 Target Model

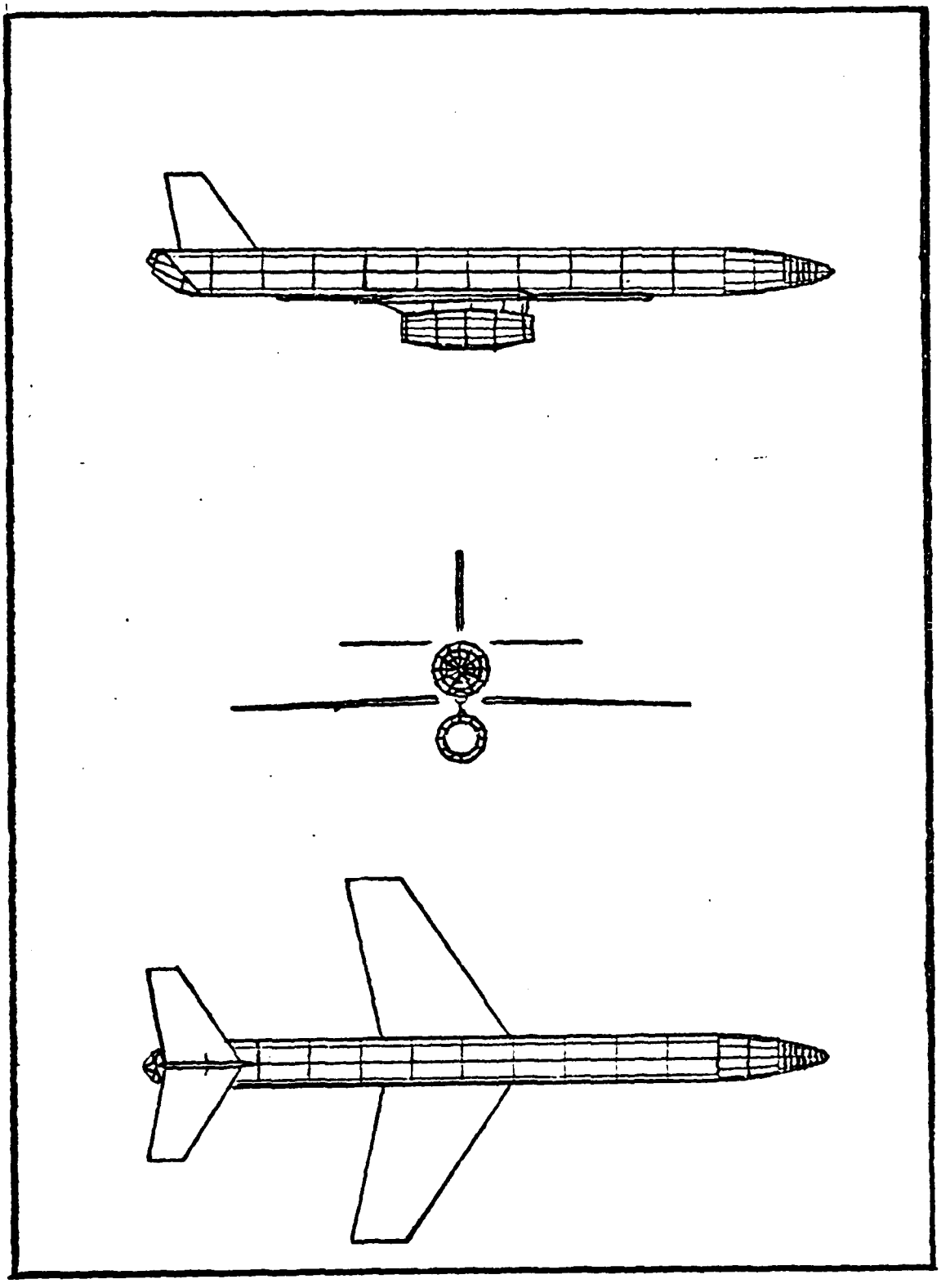
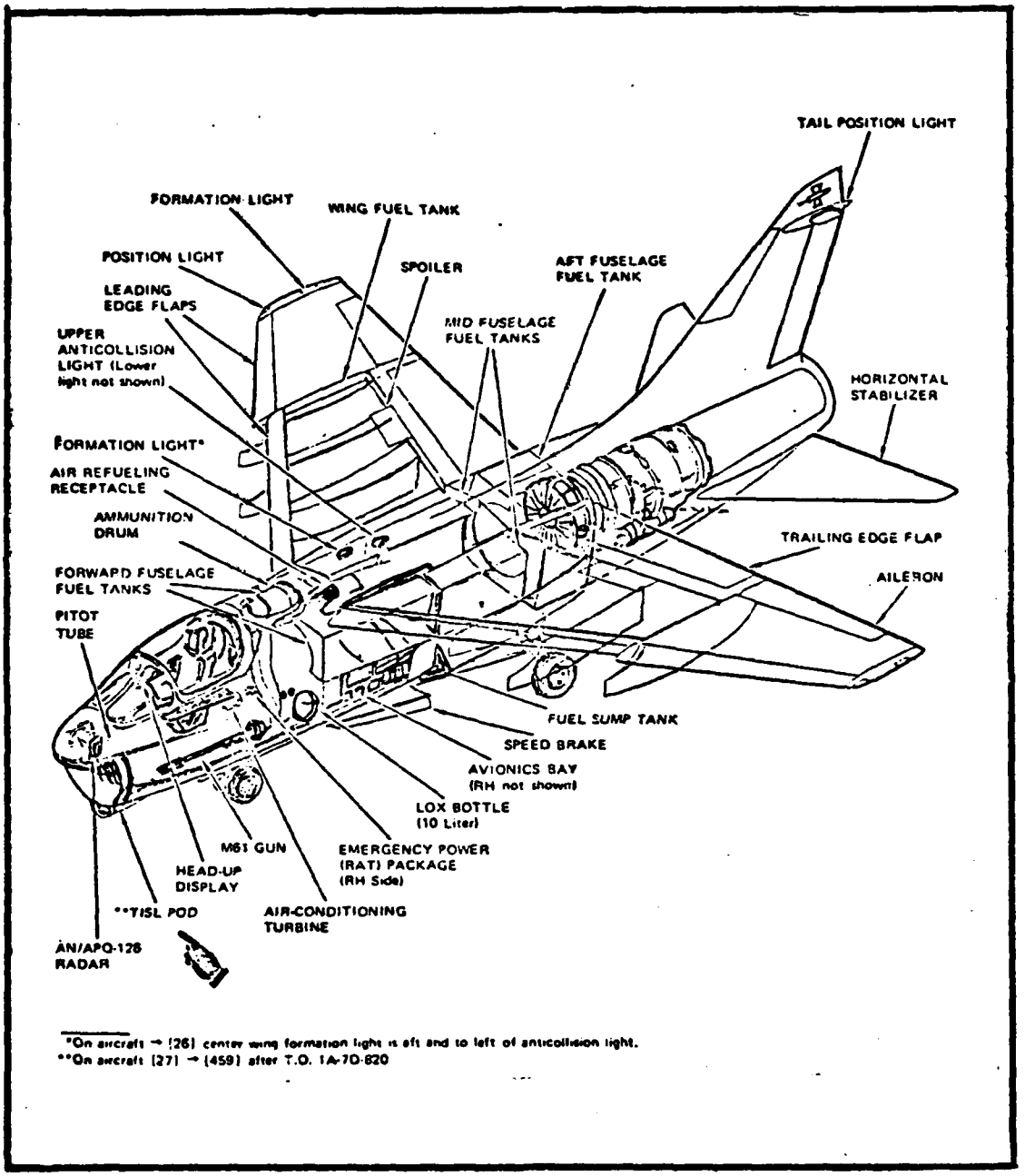


Figure A-2. 3-D Representation of BQM107 Target Model



*On aircraft → [26] center wing formation light is aft and to left of anticollision light.
**On aircraft [27] → [459] after T.O. 1A-7D-820

Figure A-3. A-7 Internal Representation

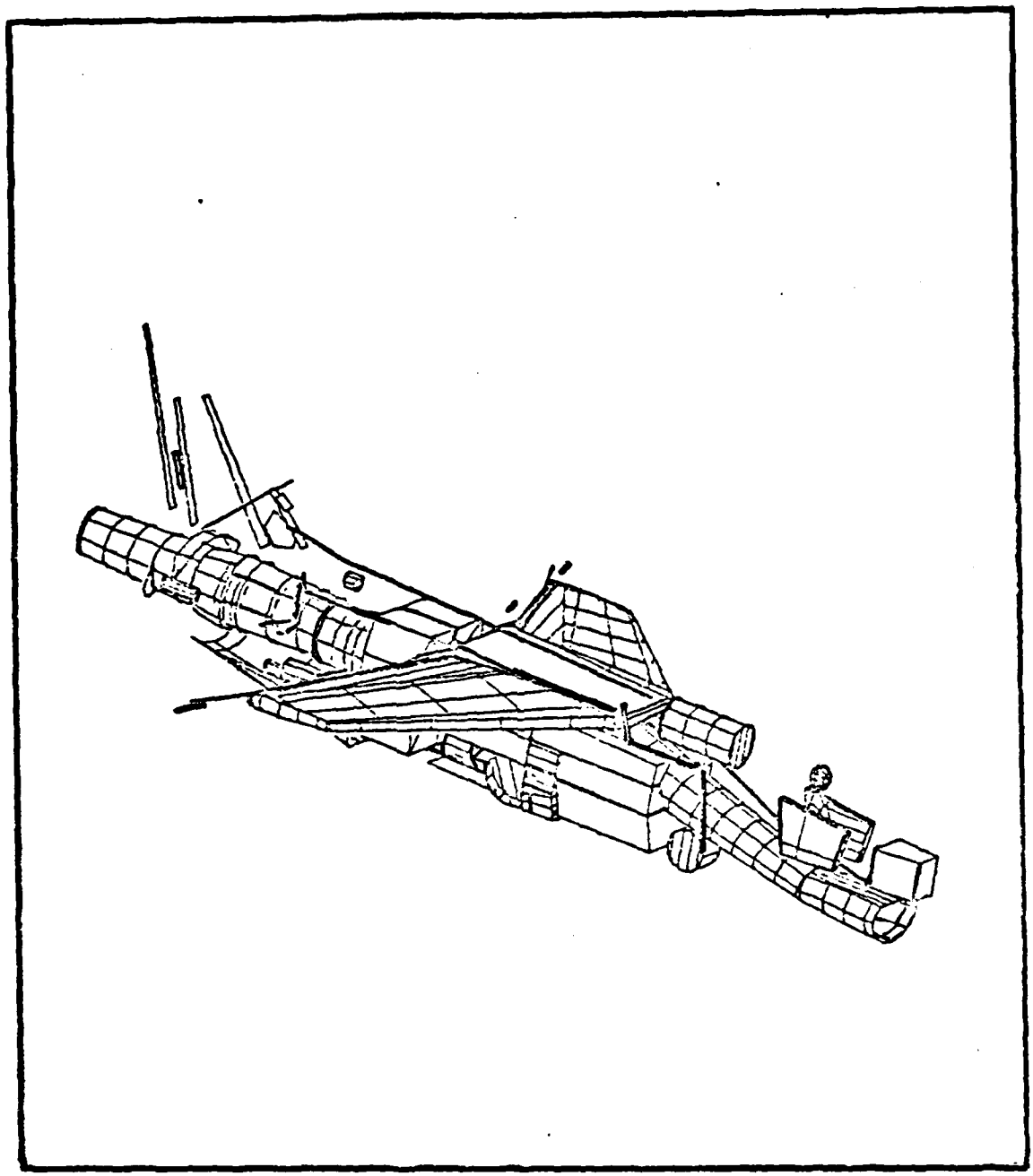


Figure A-4. A-7 Computer Generated Representation

Two files are provided to the user to describe the encounter scenario and the missile/warhead parameters. These are the case data file and the warhead data file. More information will be provided on these files in the respective user level sections.

B. Description of the Application Programs

SCANMAIN is the principle program in this package. It simulates the missile-target encounter mathematically and computes the expected damage. The three previously mentioned files (target, case, and warhead) are the input to this program and the output includes two printable summaries called SCAN1 and SCAN2, and the machine coded impact data used for NPDRAW. SCAN1 provides a descriptive summary of the target geometry, and SCAN2 is a summary of all the inputted endgame parameters, the damage results for the components, and the system and subsystem survivabilit, statistics.

NPGEN is the graphics pre-processor for the package. This program accepts the predefined target geometry file as input and sets up the machine coded target data for NPDRAW. If desired, the user can obtain an echo print of the inputted file at the end of program execution. This print will also contain the number of target vectors generated and can provide additional statistics on line generation if debugging switches are preset (this is a user dependent option).

NPDRAW is the actual graphics processor. It accepts the two machine-coded files generated by NPGEN and SCANMAIN as input and provides the user with a graphical display of the target and fragment impacts. It contains a variety of commands and options for the user which vary in complexity depending on user level selected.

PROG1 and PROG2 file manipulation programs allow the Intermediary user the ability to interactively modify the principle parameters in the case and warhead files to his own design specifications. These programs will be described in more detail in Section III.

C. NPSCAN Executive Program

NPSCAN was developed to automatically control the CP/CMS system commands on the IBM 3033 required to run the above listed programs, thus removing this burden from the student. It will handle the graphics application in PLOT10 or GRAFF77 graphics languages, depending on which terminal type the student logs in on, or alternatively, will generate statistical data only if logged on to a standard data media terminal without graphics capability. The program is written to be used interactively to provide simplicity and clarity, however, the user can experience difficulty or program crash if data is incorrectly entered. Typical causes of user problems are discussed in Section V - TROUBLE SHOOTING. The procedure to be followed to get a copy of the NPSCAN EXEC on your disk is as follows:

1. Link to the SCAN disk.

   Type - CP LINK 0559P 191 192 RR - and enter

2. When prompted for the pass word type - XXXX - and enter

   Type - ACC 192 B - and enter

3. Copy the executive onto your A disk.

   Type - COPY NPSCAN EXEC B = = A - and enter

4. Release the SCAN disk.

   Type - REL 192 (DET - and enter

Once you have a copy of NPSCAN, simply enter NPSCAN and the program will automatically run. It begins by requesting the same password used in the previous procedure, which is "XXXX". Applicable libraries and applications programs will be linked. The primary terminal keys required to operate this package are the CLEAR (PAGE) key, ENTER (RETURN) key, and numeric keypad at the top of the keyboard, as depicted in Figure A-5. The numeric keypad doubles as a function key select when followed by ENTER. Do not confuse these with PF keys which have no use in this application. On the modem connected terminals, such as the TEKTRONIX 4114, the alpha-numeric portion of the screen can be cleared using the scrolling knobs. Other non-hardwired terminals are not recommended for two reasons: first the screen alphanumerics tend to overwrite the graphics, making the application display cluttered and confusing; second, all modem connected terminals including the 4114 are much slower than the hardwired terminals.

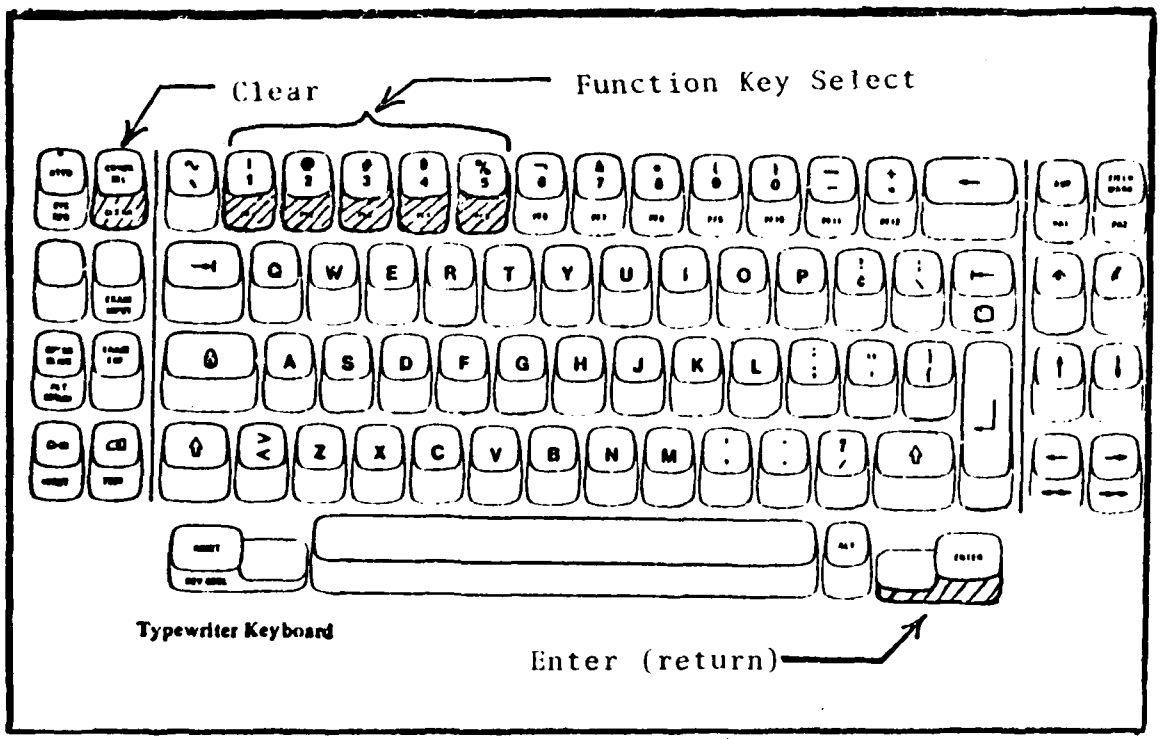


Figure A-5. Principle Keys Used With NPSCAN Application

Users begin an application run by selecting the numeric key corresponding to the terminal type being used and is self-explanatory.

```
*******************************************
*                                         *
*  TEKTRONIX   618                   1    *
*  TEKTRONIX   4012,4081,4114        2    *
*  NONE OF THE ABOVE                 3    *
*  EXIT PROGRAM                      4    *
*                                         *
*******************************************
```

The program will then access ten extra cylinders of storage space and link to the applicable graphics libraries for the application. This procedure will vary in time depending on how busy the system is. Upon completion of the setup, the next menu block allows the user the choice of viewing his revised disk space allocation before continuing.

The user will then be requested to select the level he wishes to use. Beginners should always start at the Novice level to avoid confusing details and options.

```
*****************************************
*                                       *
*  NOVICE LEVEL                  1      *
*  INTERMEDIARY LEVEL            2      *
*  EXPERIENCED LEVEL             3      *
*  EXIT PROGRAM                  4      *
*                                       *
*****************************************
```

After the user level has been selected, the target model menu is presented. As previously mentioned, users should select the simplest model to familiarize themselves with

the program before continuing with a more complicated target, since the other models require much more computer time to simulate. Returning to the simplest model should be repeated each time a new level is selected so that valuable computer time is not wasted in the NPDRAW segment experimenting with new options and commands.

BOX	1
A-7	2
BQM-107	3
SPECIAL (SEE PROF. BALL FOR AUTHORITY FIRST)	4

Choice of targets is self-explanatory for 1, 2 or 3. The Special Target Option, 4, can be used if the correct codename and required maximum extension are obtained from Professor Ball. The program will the load and execute NPGEN. At its conclusion, a summary menu for the printable output which is self-explanatory will appear.

NO SUMMARY	1
SUMMARY AT TERMINAL ONLY	2
SUMMARY AT PRINTER ONLY	3
SUMMARY AT TERMINAL AND PRINTER	4
EXIT PROGRAM	5

The next segment involves the case and warhead file selection, and since program flow is dependent on user level,

it will be discussed in detail within each of the user level sections (II, III, and IV). At the conclusion of file selection, the primary program SCANMAIN will be loaded and executed. On completion of the execution, two summary menus will appear sequentially for each of the printable output files discussed in the Introduction (SCAN1 and SCAN2). The summary options are identical in format to those shown above for the NPGEN program. At this point, the program will either branch to the final menu if the user is logged on to a non-graphics terminal, or load and execute NPDRAW prior to branching if a graphics terminal is being used. The final menu will allow the user to return to any one of several locations in the package or to exit the program. The options are as follows:

```
*****************************************
*                                       *
*      SELECT NEW USER LEVEL        1   *
*      SELECT NEW TARGET            2   *
*      MODIFY MISSILE FILES         3   *
*      RE-LOAD NPDRAW               4   *
*      3-D PLOT PACKAGE             5   *
*      EXIT PROGRAM                 6   *
*                                       *
*****************************************
```

Option 3, Modify Missile Files, is useful only to the Intermediary and Experienced levels. When the program executive is exited correctly, the previously accessed disks and libraries will be released. In case of a program crash anywhere during the application, refer to Section V.

II. NOVICE LEVEL

A. Introduction

The Novice level is intended to quickly introduce the new user to the overall application and familiarize him with the basic capabilities of SCANMAIN and NPDRAW. All non-selectable options will be automatically set to default values, and predefined case and warhead files are generated at this level. In addition to the information already outlined in Section I, the user is provided with the subsequent guide for NPGEN and NPDRAW programs.

B. NPGEN Program

This program contains the pre-processing necessary to set up the target vector file. At the Novice level, the debugging switches mentioned in Section I are not available to the user and therefore are set to default values. The target extension is automatically loaded from the executive program, and the user is given the choice of selecting either normal or high density for line drawings as depicted below.

```
**********************************
*                                *
*   NORMAL DENSITY          1    *
*                                *
*   HIGH DENSITY            2    *
*                                *
**********************************
```

At the end of program execution, the user is offered the option of printed summary.

C. NPDRAW Program

Four commands and eight drawing options are made available through use of Function keys and standard numerical data input. These functions are purposefully restricted, but are sufficient to allow the user to understand the primary functions of NPDRAW and manipulate the more important parameters.

Command MENU

DRAW TARGET	1
SET OPTIONS	2
LIST AXES	3
EXIT PROGRAM	4

1. DRAW TARGET is enabled by entering numeric key 1. It will prompt the user to enter desired values of azimuth, elevation, and rotation for the display. These angles may range from 0 to 360 degrees and can be entered in either real or integer format. An optional value can be entered for size, but is not required. After the picture has been displayed, a special menu will appear. Function keys in this menu allow the user to increment or decrement the azimuth, elevation or rotation by a ten degree (default value) factor without having to re-enter the draw command parameters. The user may also reset this increment factor to any number between 0 and 90 degrees or reduce the screen display scale to one-half, one-third or one-quarter the preset full screen size.

INCREMENT ---	(FK)	**** DECREMENT ---	(FK)
AZIMUTH	1	AZIMUTH	2
ELEVATION	3	ELEVATION	4
ROTATION	5	ROTATION	6
SCALING	7	SCALING	8
NEW COMMAND	9	RESET INCREMENT	10

2. SET OPTIONS is enabled by entering numeric key 2. It will shift the user from the command mode to the option mode. The user will be presented a descriptive summary of current option settings as shown in the example.

"1" - A one follows a component type that is set on for display. There are two component types, external and internal.

"0" - A zero follows a component type that is set off and not to be displayed.

"T" - A T follows an option descriptor that is currently true.

"F" - An F follows an option descriptor that is currently false.

Example of Option Setting Display:

CURRENT OPTIONS

"1" = ON "0" = OFF "T" = TRUE "F" = FALSE

EXTERNAL COMPS 1 INTERNAL COMPS 0 ERASE BACK LINES F

SPECIAL OPTIONS OFF T PLOT IMPACTS F DRAW AXES F

This describes a display that will plot external target components without erasing hidden lines and that has no special options. Following the option setting display, the option menu will appear.

Option MENU

```
**************************************
*                                    *
*   EXTERNAL COMPS  *        1       *
*   INTERNAL COMPS           2       *
*   DRAW ALL LINES  *        3       *
*   REMOVE HIDDEN LINES      4       *
*   NO MORE CHANGES          5       *
*   S PLOT IMPACTS           6       *
*   S DRAW AXES              7       *
*   CANCELL S OPTIONS  *     8       *
*                                    *
**************************************
```

Items suffixed by an "asterisk (*)" refer to original default settings when the program is loaded. Items prefixed by an "S" refer to special options.

a. EXTERNAL COMPS is used to set display for plotting external components only.

b. INTERNAL COMPS is used to set display for plotting internal components only.

c. DRAW ALL LINES draws applicable component type with all vectors found in target file.

d. REMOVE HIDDEN LINES tests each vector for *from user's perspective* and erases all hidden lines before plotting.

e. NO MORE CHANGES returns the user to command mode.

f. S PLOT IMPACTS enables the plotting of fragment impacts over the target as calculated by SCANMAIN.

g. S DRAW AXES superimposes an XYZ axes through the target model center. Tick spacing can be adjusted through the LIST AXES command.

h. CANCELL S OPTIONS turns off all previously set special options and returns them to false.

3. LIST AXES is enabled by entering numeric key 3 from the command menu. This provides the user with the current XYZ grid extensions, origin, and tick spacing. The user may adjust the tick space value. The default value is "1.0".

4. EXIT PROGRAM is enabled by entering numeric key 4, This returns the user to the NPSCAN executive program and provides the final branching menu described in Section I.

III. INTERMEDIARY LEVEL

A. Introduction

The Intermediary level provides the user with two extensions to the application. First and foremost is access to the case and warhead files. The user can modify and customize the principle parameters contained in these files interactively. Second, expanded command and option descriptors are available for display. The format for data entry is the same as described for the Novice level. If you have not already run the application at the Novice level, it is recommended that you go back and do so before reading on.

B. NPGEN Program

In addition to the choice of line density setting, the intermediary user has access to a set of debugging switches which will provide additional line generation statistics at the end of program execution. The listing of debugging switches is shown below and is strictly optional.

2 - All prints concerned with line generation

3 - Line generation of bounding planes

4 - Line generation of elliptic cylinders

5 - Line generation of ellipsoids

6 - Line generation of paraboloids

7 - Line generation of elliptic cones

8 - Line generation of parabolic cylinders

9 - Line generation of hyperboloid 1

10 - Line generation of hyperboloid 2

11 - Line generation of parobolic hyperboloid

12 - Line generation of hyperbolic bounding planes

13 - Line generation of parabolic bounding planes

14 - Line generation of elliptical bounding planes

16 - Listing of target vectors

19 - Retrieval of components from target array

20 - Maximum extents, optical centers and number of lines for each component

0 - Null setting no activation takes place

Typing in the integer number representing switch will activate it. The user will be prompted ten times. However, if the user wishes only to activate a few switches, these should be entered first, followed by "0" for all remaining prompts. Following this, the program will continue with normal execution. If the user wishes to have a printed listing concerning a specific component, the component number is entered as a negative value to distinguish it from other switches. For example -2002 will turn on all line generation prints for Quadric No. 2.

C. PROG1 and PROG2

These two programs provide the intermediary user with interactive control of the case and warhead data files. The user will be provided with a file manipulation menu prior to each file selection.

```
**************************************
*                                    *
*     USE DEFAULT FILE        1      *
*     USE CUSTOM FILE         2      *
*     MODIFY DEFAULT FILE     3      *
*     MODIFY CUSTOM FILE      4      *
*                                    *
**************************************
```

1. USE DEFAULT FILE will copy the applicable default file from disk and load it into SCANMAIN as was done at the Novice level.

2. USE CUSTOM FILE will copy and load a user defined file that was previously created and saved under a user defined name.

3. MODIFY DEFAULT FILE will copy the applicable default file and load it into the PROG1 or PROG2 program. The user will then be given instructions on flipping through the file parameters and selectively changing or saving current values. The formats are as follows for the two program Menus.

PROG1 (Warhead File)

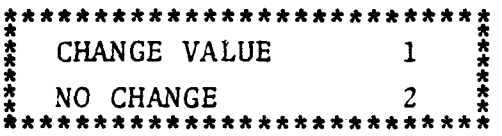
```
**********************************
*                                *
* FRAGMENT PARAMETERS        1   *
* FUZING PARAMETERS          2   *
* BLAST ENVELOPE PARAMETERS  3   *
* PRINT SUMMARY              4   *
* EDITING COMPLETE           5   *
*                                *
**********************************
```

PROG2 (Case File)

```
****************************
*                          *
*ALL PARAMETERS        1   *
*MISSILE PARAMETERS    2   *
*PRINT SUMMARY         3   *
*EDITING COMPLETE      4   *
*                          *
****************************
```

To assist the user in identifying specific parameters, Tables A-1 through A-9 are provided in Section V. These include

the parameter description, units of measure, and in some cases a pictorial representation. Once the user has selected a parameter segment from the particular menu, the current values from the file will be given in sequence with their definition and a request to accept the value or change it to a new value.



On completion of one segment of parameters, the user will be returned to the selection menu to select the next segment, view a summary of parameters, or exit the program. These segments can be accessed in any order and as often as desired until the user is satisfied with all changes. The EDITING COMPLETE key is final and terminates the program. Therefore, it is recommended that the user carefully check all values using the PRINT SUMMARY option first. Once the program is exited, the user will be given the choice of making a permanent copy of the modified file on his A-disk. To avoid confusion, the user should not give it the same name as the default files, but should select a name that is similar for easy recall. Also, clear distinction between the filenames of a case-type file and warhead-type file should be maintained by the user to prevent inadvertent loading of a customized case file into the warhead program (PROG1) or vice-versa, resulting in a system crash.

4. MODIFY CUSTOM FILE will load a previously saved file into the PROG1 or PROG2 programs for further modification, after checking the validity of the file. The same procedure described in MODIFY DEFAULT FILE is followed for accessing and changing parameter values.

D. NPDRAW Program

The intermediary user is provided with eight commands and fifteen options. The command menu is as follows:

DRAW TARGET	1
SET OPTIONS	2
EXIT PROGRAM	3
SET APERTURE	4
HIDDEN LINE LENGTH	5
SET LINE TOLERANCE	6
SET ANGLE TOLERANCE	7
LIST AXES	8

1. DRAW TARGET is enabled in the same manner as described in the Novice level section, however, the type of data to be input by the user will depend on the options that are currently set and will be discussed in detail below.

2. SET OPTIONS will transfer the user to the option mode, provide him with the current listing of option settings, and present an option menu that is somewhat expanded from the Novice level.

Option MENU (Intermediary)

EXTERNAL COMPS	1	CARTESIAN COORDS	9
INTERNAL COMPS	2	SPHERICAL COORS	10
DRAW ALL LINES	3	***SPECIAL OPTIONS***	
ERASE HIDDEN LINES	4	S DRAW WITH DOTS	11
OPTICAL CENTER	5	S PLOT IMPACTS	12
EXPLICIT CENTER	6	S DRAW AXES	13
PARALLEL PROJ	7	CANCELL S OPTIONS	14
PERSPECTIVE PROJ	8	NO MORE CHANGES	15

"0", "1", "T", and "F" have the same significance as with the Novice level. "2" signifies the applicable component type is set on and to be displayed with dots vice interconnected vectors. Options 1, 2, 3, 4, 12, 13, 14 and 15 are the same as described in the Novice level. Only the new options will be discussed in this section.

a. OPTICAL CENTER is the default setting and places the display center or origin in the center of the target.

b. EXPLICIT CENTER allows the user to specify the XYZ center of the plot during picture sequences.

c. PARALLEL PROJ is the default projection option and displays the target at optimum viewing distance from the viewer so that it fills the full screen on each projection. This can be overridden by the user during a picture sequence

in two ways; by specifying the optional size parameter, or by changing the screen scaling. When set, this option will result in user prompts for azimuth, elevation and rotation.

d. PERSPECTIVE PROJ requires the user to specify the range in addition to the azimuth, elevation, and rotation.

e. SPHERICAL COORDS is the default setting and is applicable with either of the two previously mentioned options.

f. CARTESIAN COORDS overrides the three previous options and requires the user to provide XYZ viewer coordinates prior to the picture sequence. Rotation and optional size remain in effect.

g. DRAW WITH DOTS will set the component type to "2" and display the components with dots instead of the normal vectors. The spacing of dots will depend on the line segment setting and is normally more time consuming to draw.

3. SET APERTURE command displays the current viewing aperture and allows the user to reset this value. The default setting is ten degrees. For rectangular plotting surfaces it is mapped to the full length of the smaller side.

4. HIDDEN LINE LENGTH displays the current maximum length of a line segment to be drawn or removed based on the visibility of its midpoint. The default value is 10.0 inches and can be reset by the user.

5. SET LINE TOLERANCE displays the current scale factor for hidden line removal and prevents adjacent surfaces or far side open surfaces from being eliminated during hidden line removal. The default value is 0.500 and can be reset by the user.

6. SET ANGLE TOLERANCE displays the minimum angular limit for hidden line removal and is used to check line segments of quadric surfaces only if the angle between the line of sight and surface normal is greater than this limit. The default value is 98 degrees and can be reset by the user.

7. EXIT PROGRAM and LIST AXES commands are the same as those described in Section II.

IV. EXPERIENCED LEVEL

A. Introduction

The experienced level provides the user with the full range of commands and options available. Program control is achieved by function keys, numerical data entry, and a more flexible set of typed commands in the NPDRAW program. The manipulation of case and warhead files is done by the direct Xedit feature built into the control executive. Therefore, normal Xedit commands used with the CP/CMS system are fully usable. Care must be taken when making changes to files to ensure that integers are right justified and placed in the correct columns. Tables A-1 through A-9 provide all the necessary information to assist the user with this segment of the package. NPGEN features are identical to those described at the intermediary level.

B. Listing of Abbreviations

The following listing of abbreviations is to be used in conjunction with the examples given to describe each of the experienced level commands in NPDRAW. All values are free format.

Abbreviation	Description
AZ	Azimuth value in degrees
EL	Elevation value in degrees
ROT	Rotation value in degrees
R	Range value used with spherical coordinates
SZ	Size extension given as an optional parameter
SN	Debugging switch ID number
XC,YC,ZC	XYZ coordinates for center of plot
XV,YV,ZV	XYZ coordinates for viewer location
XL,YL,ZL	XYZ extensions from the origin
NV	New value entered by user to replace a default value
FR#	Number of frames used in a SCENE sequence
D**	D preceeding any other parameter represents an incremental change in that parameter
CT	Component type; examples are B(OX), Q(UADRIC), P(OLYGON)
CN	Component identification number
TS	Tick spacing value for axes drawing
T	Viewing time in a SCENE command

C. NPDRAW Program

The commands available to the user are described in the subsequent paragraphs. They are shown in upper-case leters with their optional parts in parenthesis.

1. EN(D) terminates the execution of NPDRAW and returns control to the executive program.

2. P(ICTURE) is the basic drawing command and may be used alone or with numeric parameters as illustrated in the examples. If typed without parameters, the appropriate prompts will be given to the user interactively.

Example 1: P AZ EL ROT (SZ)

Current option setting; parallel projection; spherical coordinates; optical center.

Example 2: P R AZ EL ROT (SZ)

Current option setting; perspective projection; spherical coordinates; optical center.

Example 3: P XV YV ZV XC YC ZC ROT (SZ)

Current option setting; cartesian coordinates; explicit center.

3. SC(ENE) allows the user to view a sequence of frames and can be set like PICTURE in a variety of ways dependent on current options. Prior to initializing the first SCENE command, FRAMECOUNT 0 must be typed in. Following this, SCENE is initialized by typing it in alone or with the appropriate numerical parameters. Next, type in FRAMECOUNT 1, after which another SCENE command or a STEP command must be used. If followed by SCENE, the program will display the initial scene followed by the user specified number of frames in sequence up to and including the final scene specified

in the second SCENE command. Alternatively if STEP is used, the program will display the initial scene followed by the user specified number of frames in sequence, with each frame varying by some specified parameter change(s). See examples for clarification.

Example 1 (Using Scene command twice):

FR 0

SC T R AZ EL ROT (SZ)

FR 1

SC FR# R AZ EL ROT (SZ)

Current option setting; cartesian coordinates; optical center.

Example 2 (Using Scene command twice):

FR 0

SC T XV YV ZV ROT (SZ)

FR 1

SC FR# XV YV ZV ROT (SZ)

Current option setting; cartesian coordinates; optical center.

Example 3 (Using Scene and Step command):

FR 0

SC T XV YV ZV ROT (SZ)

FR 1

ST FR# DXV DYZ DZV DXC DYC DZC DROT DSZ

Current option setting; cartesian coordinates; optical center.

Any one or more numerical parameters may be varied in the STEP command, but all must be specified.

4. SY(STEM) or SU(BSYSTEM) allows the user to specify a list of components and display them as an independent subsystem. To create the list the user must specify those components by type and component number following the command, as illustrated in subsequent examples. If the command is typed without a listing of parameters, it will display the currently defined subsystem list if one exists.

Example: SY CT CN CT CN1 CN2, etc.

CT and CN must correspond to existing component types and identification numbers in the current target being simulated.

5. AX(ES) allows the user to either display the current origin, extensions, and tick increments, or change them accordingly. To actually view the axes, the AXIS option must first be set to true before using the P(ICTURE) or SC(ENE) command.

Example: AX TS XC YC ZC XL YL ZL

To change the current setting from:

CENTER AT	0.0	0.0	0.0
LENGTH	50.0	50.0	10.0
TICK SPACE	1.0		

to the following;

CENTER	5.0	5.0	0.0
LENGTH	100.0	100.0	10.0
TICK SPACE	5.0		

the user would type in:

AX 5 5 5 0 100 100 0

6. D(EBUG) allows the user to set a variety of debug switches similar to those discussed in NPGEN when working with a new target model. The swtiches are set by entering the integer number representing the switch following the command. Typing the command alone will provide a listing of the current switches. Useful switches available to the user are as follows:

Switch	Description
1	Command text analysis.
15	Trace of target line data as it is read.
17	Hidden line removal, line segment generation.
18	Hidden line removal, hidden algorithm results.
19	Hidden line removal, component retrieval.
21	Cross section intermediate results.
25	Axes intermediate results.

Example: D SN will output DEBUGGING SWITCHES SN and will list the results prior to the next graphics display.

7. O(PTION) is the most versatile command in this grouping and allows the user to reset any one or more of twenty-four different option parameters. The parameter(s) is typed in after the command O(PTION) and is followed by a descriptive summary of the current option settings. Available options to the experienced user are listed below:

Parameter	Description
EXTL	Draw external components with lines.
EXTD	Draw external components with dots.
NOEX	Do not draw external components.
INTL	Draw internal components with lines.
INTD	Draw internal components with dots.
NOI	Do not draw internal components.
DR	Draw all vectors in target file.
HI	Remove vectors hidden from viewer perspective.
CTRO	Optical center of target = center of plot.
CTRE	User specified center = center of plot.
NOP	Generate parallel projection
P	Generate perspective projection.
SP	Viewer position given in spherical coordinates with 3-D plot center as origin.
CA	Viewer position given in target model coordinate system.
NOS	Cancels all special plot options.
	Special Options
AX	Draw cartesian axes through target model.
SU	Draw user defined component system
DO	Draw user defined system using dots.
MSKI	Save the current frame and store in file 35.

Parameter	Description
MSKD	Draw the previously saved rame.
IM	Plot impacts generated by SCANMAIN.
NOEJ	Inhibits normal screen erasure allowing multiple pictures on same frame.
EXP	Generates exploded view above center of plot.
X	Draw a cross-sectional view by passing a plane through the target model.

Example: O HI AX IM will set the drawing for hidden line removal and superimpose a cartesian axis and generated impacts over the target model.

8. AP(ERTURE) is used to display or reset the aperture setting as described in the intermediary level. It can be typed in alone to display the current setting or with a new value.

9. HL(ENGTH) is used to display or reset the incremental length for hidden line removal.

10. HTL is used to display or reset the scale factor for hidden line removal.

11. HTA is used to display or reset the angular limit factor for hidden line removal.

12. EJ(ECT) allows the user to advance a frame when in multiple picture mode.

13. HE(LP) allows the user to list a descriptive summary of each of the above commands. Typed in alone it will simply

recopy the complete list of available commands already given. Followed by a specific command, it will provide the user with instructions about using that command.

Example: HE O will provide the user with information on the O(PTION) command.

V. TROUBLE SHOOTING

A. Principle Parameter Tables for Case and Warhead Files

These tables provide a detailed listing of all case/warhead file parameters together with descriptive and pictorial information to assist the intermediary and experienced level users.

B. Common System Difficulties

When working with a complex application, it is easy to make errors. Errors can result in program diagnostics with standard fix-up, system diagnostic with program crash or worse, an application crash. This brief section will attempt to describe some of the more common pitfalls to avoid when using NPSCAN.

1. The SCAN password is incorrectly typed and an improper access occurs. The program will malfunction during the application. The user must exit with the first EXIT PROGRAM function key and restart the application.

2. Insufficient storage space is available because the system is too busy. The user must exit the program at the next menu block containing an EXIT PROGRAM function key.

3. User inputs a non-existent function key number. A diagnostic will appear and return the user to reselect a correct function key.

4. The user inputs a letter or a real number when an integer function key is required. The program will crash. If the user is returned to CMS, immediately type in the command CLERE to release the previously accessed disks and libraries before restarting the program. If the user is returned to the control executive, exit the program at the next menu block and restart.

5. User inputs an integer when a real is expected or a real when an integer is expected during a numeric data entry sequence. Standard fix-up will be taken and the program will continue. Problems in 4 and 5 can b easily avoided if the user slows down and checks each entry before hitting the ENTER key.

6. System incorrectly accesses disk space; program will malfunction during the application. This has been known to happen on rare occasions, and the user should always make use of the Query Disk function key provided at the beginning of the application. If the following two entries are not as shown below, he should exit the program and restart.

BALL	192	B	R/O	8	3330	1024	(Additional numeric information)
TEMP	193	C	R/W	10	3350	1024	(Additional numeric information)

7. Numeric data is incorrectly formatted while using NPDRAW commands. Diagnostic appears and the user reinstates the command procedure correctly.

TABLE A-1
Warhead Data File Line One

User Level	Column	Parameter	Units	Range of Values	Format	Description
I	1-10	NUMZON	-	1-6	I10	Number of static polar zones in warhead
E	1-10	NUMZON	-	1-36	I10	
E	11-20	NMASS	-	1-36	I10	Number of mass classes for each polar zone One mass class only at intermediary level.

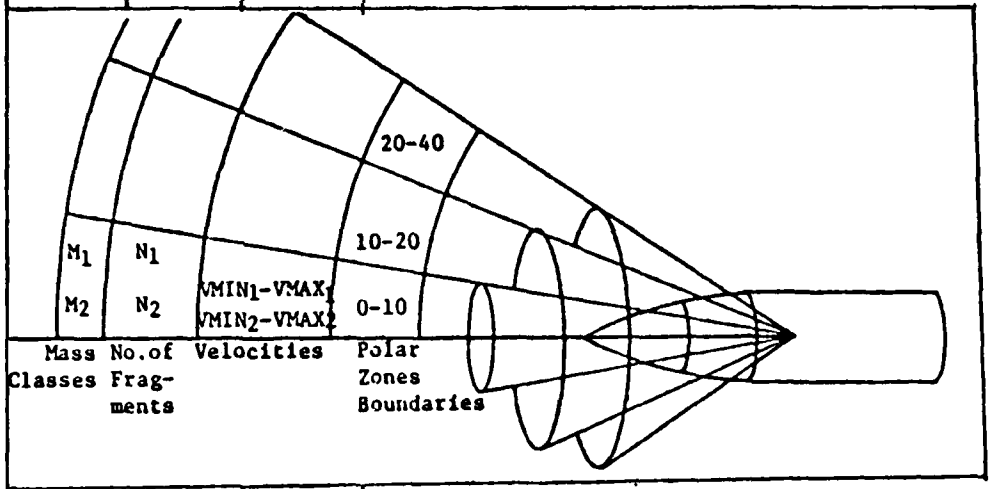


TABLE A-2

Warhead Data File Line Two

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	ZONMIN (I)	Degrees	0-180	F10.3	Lower angle boundary of Ith static polar zone
I,E	11-20	ZONMAX (I)	Degrees	0-180	F10.3	Upper angle boundary of Ith static polar zone
I	21-30	VMIN (I)	Ft/Sec	≥ 0	F10.3	Speed of fragments at lower boundary of Ith zone
I	31-40	VMAX (I)	Ft/Sec	≥ 0	F10.3	Speed of fragments at upper boundary of Ith zone
E	21-30	VMIN (N,I)	Ft/Sec	≥ 0	F10.3	Speed of fragments of Nth mass class at lower boundary of Ith polar zone
E	31-40	VMAX (N,I)	Ft/Sec	≥ 0	F10.3	Speed of fragments of Nth mass class at upper boundary of Ith polar zone

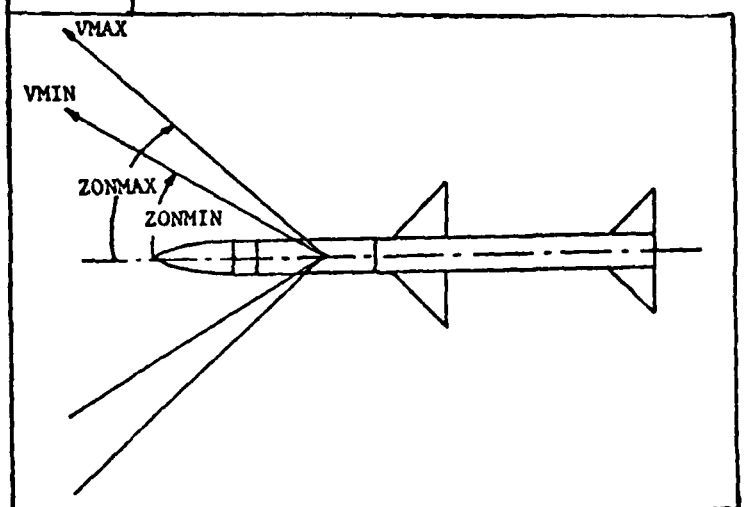


TABLE A-2

Warhead Data File Line Two (continued)

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	41-50	FRAGMS (N,I)	Grains	≥ 0	F10.3	Average mass per fragment of Nth mass class in Ith polar zone. At Intermediary level N = 1.
I,E	51-60	FRAGNO (N,I)	-	≥ 0	F10.3	Total number of fragments of Nth mass class in Ith polar zone. At intermediary level N = 1.
I,E	61-70	XWH (N,I)	Ft		F10.3	Initial position of the fragments of the Nth mass class and Ith polar zone with respect to center of warhead measured along missile axis at intermediary level N = 1.

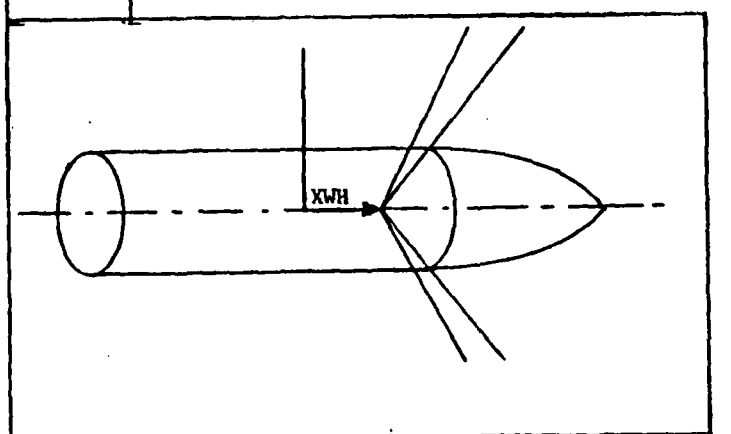


TABLE A-2

Warhead Data File Line Two (continued)

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	71-74	NMAT(N,I)	—	1,...,10	I4	Material code indicating the type of material of which the fragment is composed. The following values are used: 1 - magnesium 2 - aluminum 2024T 3 - titanium alloy 4 - face hardened steel 5 - mild steel 6 - hard steel 7 - lexan 8 - stretched plexiglass 9 - doron 10 - bullet resistant glass at the intermediary level N = 1
E	75-80	SHAP	—	CUBE SPHERE RECTAN IRREGU	A6	The fragment shape. The following values are available for input: CUBE - cubical fragments SPHERE - spherical fragments RECTAN - rectangular fragments IRREGU - irregular fragments

TABLE A-3

Warhead Data File Line Three

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	FUZTYP	—	0,1,2	I10	Specifies which type of fuze model is to be simulated 0 - instantaneous detection, no fuze simulated 1 - fuze on IR source only 2 - fuze on any reflected target source
I,E	11-20	FUZPOS	Ft.	all	F10.3	Position of the proximity fuze target detection device with respect to the warhead center. This value is along the missile axis.
I,E	21-30	DELAY	Sec.	≥ 0	F10.3	Delay time between target detection and warhead detonation.
I,E	31-40	FUZANG	Degrees	0°-180°	F10.3	Mean value of proximity fuze cone half-angle measured from the missile centerline.
E	41-50	SIGFUZ	Degrees	0°-180°	F10.3	Standard deviation of the fuze cone half angle assuming a normal distribution of angles.
I,E	51-60	FUZRAN	Ft.	≥ 0	F10.3	Proximity fuze cut off range. If FUZRAN = 0 no fuze cut off is to be simulated.
I,E	61-66	RADMSL	Ft.	≥ 0	F6.2	Radius of missile cylindrical body.

Table A-3

Warhead Data File Line Three (continued)

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	67-72	POSNOS	Ft	≥ 0	F6.2	Position of missile contact fuze or nose with respect to warhead center
I,E	72-78	POSTAL	Ft	≥ 0	F6.2	Distance of missile aft end from warhead center.

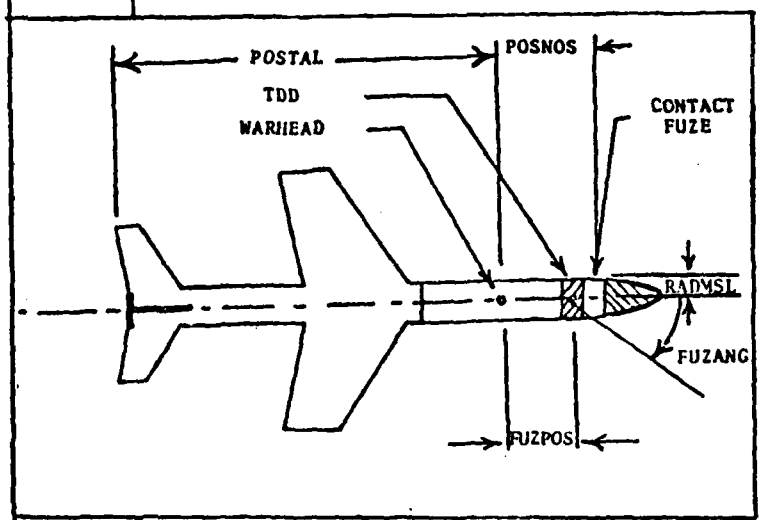


TABLE A-4

Warhead Data File Line Four

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	FUSBLR	Ft.	≥ 0	F10.2	Fuselage blast radius is the maximum distance from the target centerline at which detonation will cause catastrophic structural failure.
I,E	11-20	FUSBL1	Ft.	≥ 0	F10.2	Distance of target CG to front of fuselage blast cylinder.
I,E	21-30	FUSBL2	Ft.	≥ 0	F10.2	Distance of target CG to back of fuselage blast cylinder.
I,E	31-40	WNGBLR	Ft.	≥ 0	F10.2	Wing blast radius is the maximum distance from wing centerline at which detonation will cause catastrophic structural failure.
I,E	41-70	WNGPT1(3)	Ft.	≥ 0	3F10.2	X,Y,Z components of the endpoint of the wing blast centerline closest to the target fuselage and measured from target CG.

TABLE A-5

Warhead Data File Line Five

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-30	WNGPT2 (3)	Ft	≥ 0	3 F10.2	X, Y, Z components of the endpoint of the wing blast centerline closest to the wing tip and measured from target CG.

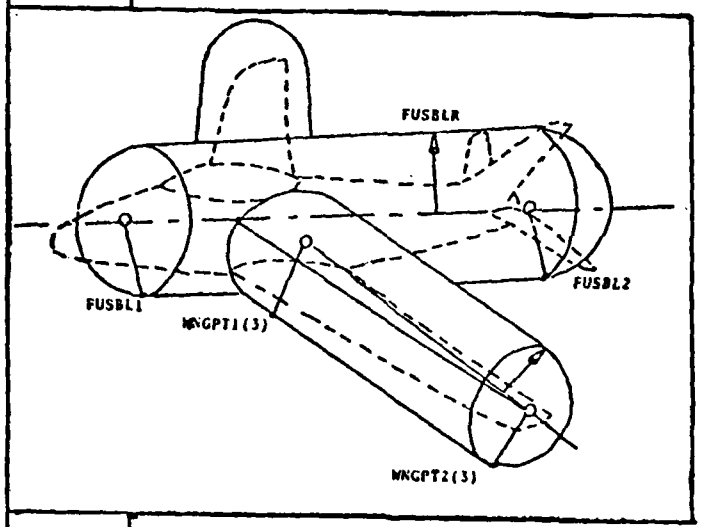


TABLE A-6

Case Data File Line One

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	ITRAJ	—	1,2,3	I10	Flag which indicates the type of missile trajectory to be simulated. ITRAJ = 1, indicates a fixed trajectory which is specified by an initial missile position measured from the aircraft CG. ITRAJ = 2, indicates a trajectory with a fixed missile guidance error (or miss distance). ITRAJ = 3, indicates a trajectory in which the missile guidance error is computed from a normally distributed sample with a given circular probable error, CEP.

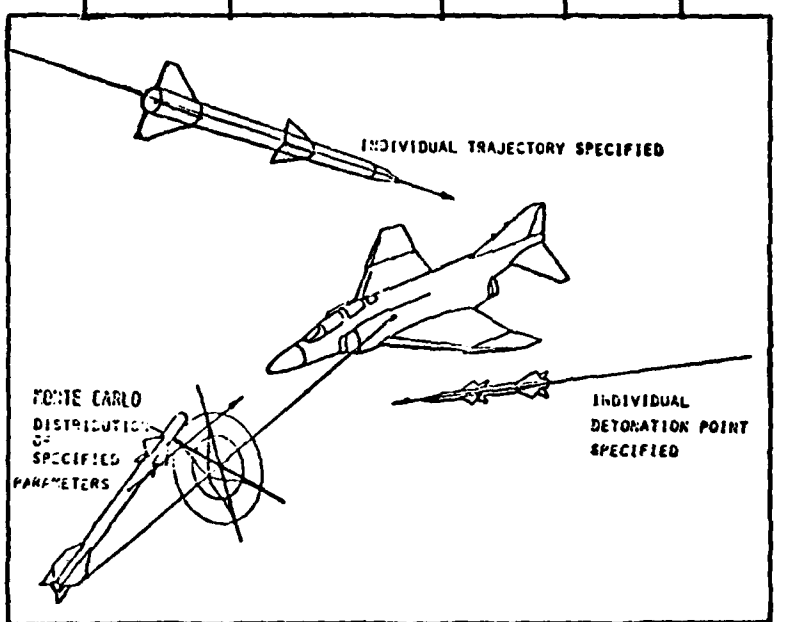


TABLE A-7

Case Data File Line Two

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	JNUM (NUMMSL)	—		I10	The number of missile trajectories to be considered.
E	11-20	TSPD (VTARG)	Ft/Sec	>0	F10.3	The target speed at time of intercept.
E	21-30	TROL (PSIT)	Degrees	0-360	F10.3	The roll angle of target at intercept. Ψ
E	31-40	TPIT (THETAT)	Degrees	$\pm$ 90-0	F10.3	The pitch angle of target at intercept. Θ
E	41-50	TYAW (PHIT)	Degrees	0-360	F10.3	The yaw angle of target at intercept. Ω

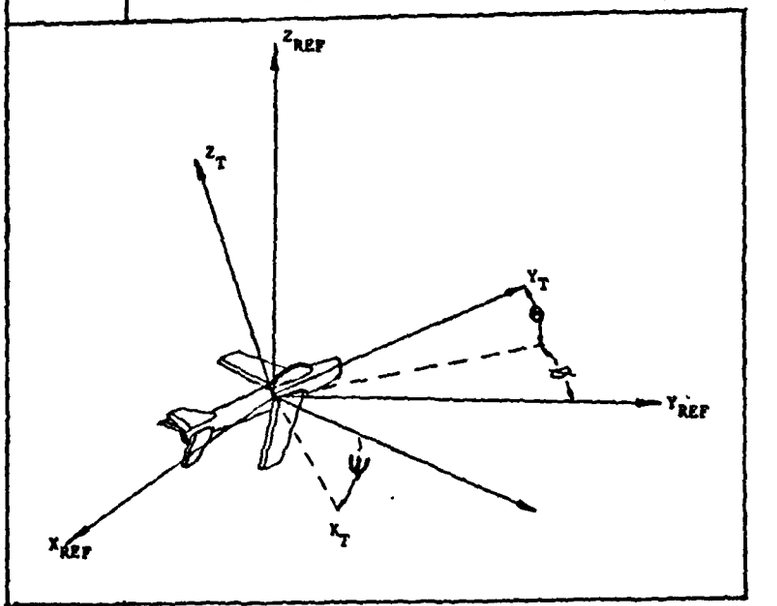


TABLE A-7

Case Data File Line Two (continued)

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	51-60	MSP (VMIS)	Ft/Sec	> 0	F10.3	The missile speed at intercept.
I,E	61-70	MAA (ATTANG)	Degrees	$\geq$ 0	F10.3	A mean value for the missile angle of attack.
E	71-80	MAAS*(SIGMAA)	Degrees	$\geq$ 0	F10.3	The standard deviation of the missile angle of attack.

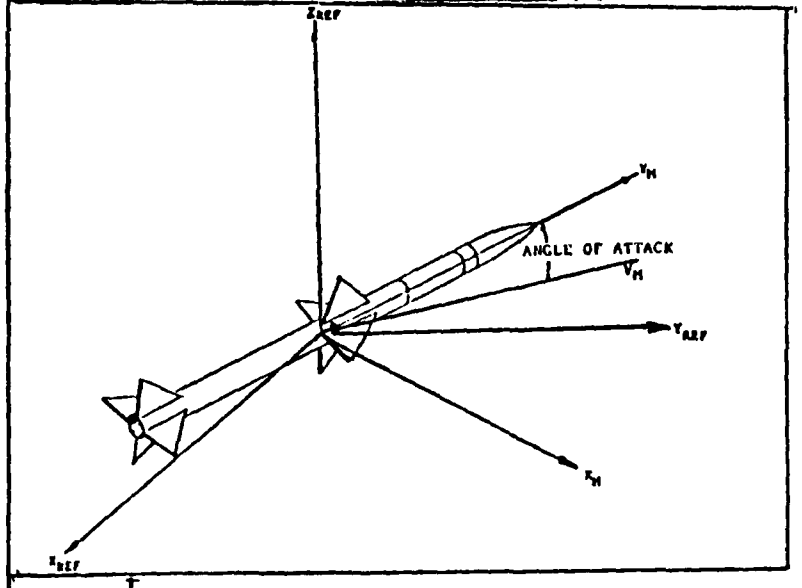


TABLE A-8

Case Data File Line Three

User Level	Column	Parameter	Units	Range of Values	Format	Description
E	1-10	MPA (ELEVAT)	Degrees	±90-0	F10.3	The mean elevation angle of the missile measured with respect to a flat earth.
E	11-20	MPAS (SIGMAE)	Degrees	≥ 0	F10.3	The standard deviation of the missile elevation angle.
E	21-30	MAZ (AZIMUT)	Degrees	0-360	F10.3	The mean azimuth angle of the missile measured with respect to a flat earth.
E	31-40	MAZS (SIGMAZ)	Degrees	≥ 0	F10.3	The standard deviation of the missile azimuth angle.

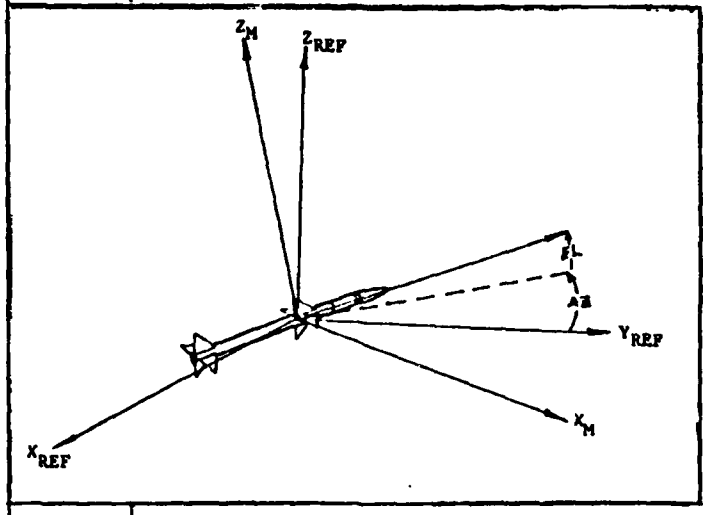


TABLE A-8

Case Data File Line Three (continued)

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	41-50	ALT	Ft.	≥ 0	F10.3	The altitude above sea level at which the engagement takes place.
E	51-80	AIMX AIMY AIMZ (AIMPT (3))	Ft.	all	3F10.3	The nominal value of the missile aimpoint measured with respect to the target CG

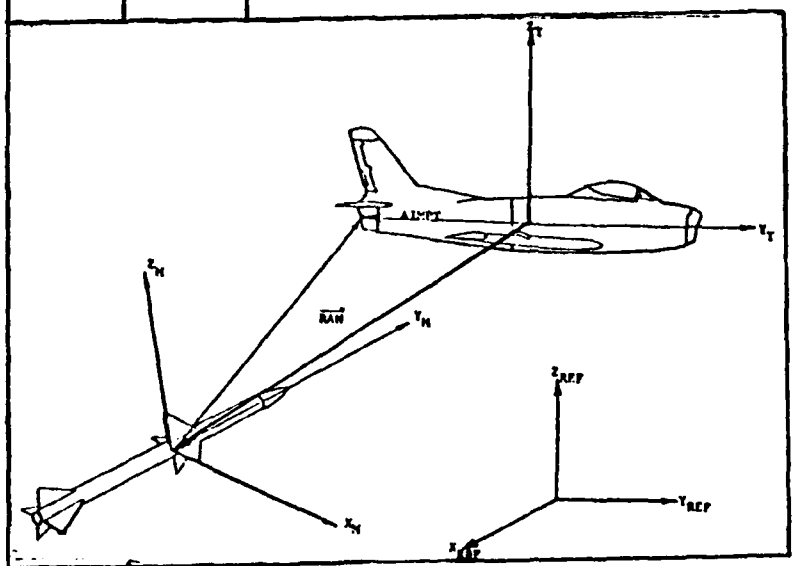


TABLE A-9

Case Data File Line Four

This line is used when ITRAJ = 1 on Case Data File Line One

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-30	MISX MIXY MISZ (RAN(3))	Ft.	all	3F10.3	The initial position (range) of the missile measured in aircraft coordinate system. The values are input when detonation point is specified by user and not computed by the program.
I,E	31-40	TAOA(AOAT)	Degrees	±90-0	F10.3	The target angle of attack at intercept.
I,E	41-50	TSS(SST)	Degrees	±90-0	F10.3	The target sideslip at intercept.
I,E	51-60	MAOA(AOAM)	Degrees	±90-0	F10.3	The missile angle of attack at intercept.
I,E	61-70	MSS(SSM)	Degrees	±90-0	F10.3	The missile sideslip at intercept.

TABLE A-9

Case Data File Line Four-A

This line is used when ITRAJ = 2 on Case Data File Line One

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	CPA(TCPA)	Ft.	$\geq$ 0	F10.3	The closest point of approach of the missile trajectory to the specified nominal aimpoint. This value is input when it is desired to determine the average survival probability for a fixed guidance miss distance.
I,E	11-21	TAOA(AOAT)	Degrees	$\pm$90-0	F10.3	The target angle of attack at intercept.
I,E	21-30	TSS(SST)	Degrees	$\pm$90-0	F10.3	The target sideslip at intercept.

TABLE A-9

Case Data File Line Four-B

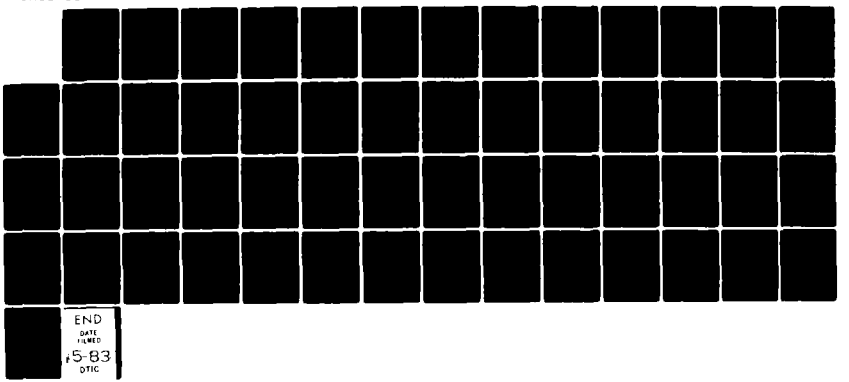
This line is used when ITRAJ = 3 on Case Data File Line One

User Level	Column	Parameter	Units	Range of Values	Format	Description
I,E	1-10	CEP(TCEP)	Ft.	≥ 0	F10.3	The missile circular probable error. (The radius of a circle within which 50% of the missile trajectories chosen from a normally distributed sample must pass) This card is input instead of card type 4 or 4A for situations in which the user desires the simulation to generate the initial engement geometry from a distribution of encounter conditions and in which the miss distance for individual trajectories is drawn from a bi-variant normal distribution of specified CEP.
I,E	11-20	TAOA(AOAT)	Degrees	$\pm$90-0	F10.3	The target angle of attack at intercept.
I,E	21-30	TSS(SST)	Degrees	$\pm$90-0	F10.3	The target sideslip at intercept.

```
&TRACE ON                                                                    MYT00040
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*            MYT00050
*                                                                            MYT00060
* NPSCAN IS THE DRIVER EXEC FOR NPGS SCAN APPLICATION.IT HAS BEEN            MYT00070
* WRITTEN TO ENCOMPASS SEVERAL LANGUAGES FOR THE GRAPHICS AND                MYT00080
* WILL RUN ON ALL THE TERMINALS CONNECTED TO THE IBM 3033 AT THE             MYT00090
* TIME OF WRITING. THE EXEC IS DESIGNED TO PROVIDE THE USER WITH             MYT00100
* MAXIMUM FLEXIBILITY BY PROVIDING AUTOMATIC PROGRAM CONTROL,THREE           MYT00110
* LEVELS OF INTERACTION, AND SELF-HELPING INSTUCTIONS AND DIAGNOSTICS.       MYT00120
* ------------------------------------------------------------------         MYT00130
*                                                                            MYT00140
CLRSCRN                                                                      MYT00150
&BEGTYPE -STAT1                                                              MYT00160
  THE NPGS SCAN APPLICATION IS DESIGNED TO PROVIDE THE USER WITH             MYT00170
  MAXIMUM FLEXIBILITY BY PROVIDING AUTOMATIC PROGRAM CONTROL,THREE           MYT00180
  LEVELS OF INTERACTION, AND SELF-HELPING INSTUCTIONS AND DIAGNOSTICS.       MYT00190
                                                                             MYT00200
  TO USE SCAN YOU MUST FIRST OBTAIN THE PASSWORD FROM PROF. BALL AND         MYT00210
  THE AIRBORNE TARGET YOU WILL BE CONDUCTING YOUR EVALUATION ON.             MYT00220
  LINKING WILL TAKE ABOUT FIFTEEN SECONDS TO COMPLETE.                       MYT00230
-STAT1                                                                       MYT00240
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*            MYT00250
*                                                                            MYT00260
*  LINK APPLICABLE PROGRAMS AND DATA FILES FOR APPLICATION                   MYT00270
*  ------------------------------------------------------                    MYT00280
*                                                                            MYT00290
CP LINK 055SF 151 192 RR                                                     MYT00300
ACC 192 B                                                                    MYT00310
CLRSCRN                                                                      MYT00320
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*            MYT00330
*                                                                            MYT00340
*    SELECT TERMINAL AND SET TERMINAL FLAG                                   MYT00350
* ----------------------------------------                                   MYT00360
*                                                                            MYT00370
&BEGTYPE -STAT3                                                              MYT00380
  USER INPUT REQUIREMENTS WILL BE IN THE FORM OF PROMPTS AND WILL REQUIRMYT00390
  EITHER A FUNCTION KEY SELECTION OR KEYBOARD INPUT DEPENDING ON THE         MYT00400
  LEVEL OF USER AND TYPE OF DATA REQUIRED.  FOR CONSISTENCY NUMERIC          MYT00410
  KEYS 0 THRU 9 ON THE KEYBOARD WILL DOUBLE AS FUNCTION KEYS AT ALL          MYT00420
  TERMINALS.  WHEN YOU ARE READY TO BEGIN ENTER THE CORRESPONDING            MYT00430
  FUNCTION KEY(INTEGER) FOR THE GRAPHICS TERMINAL YOU ARE USING.             MYT00440
    ********************************************                             MYT00450
    *   GRAPHICS TERMINALS      FUNCTION KEY    *                            MYT00460
    *                                           *                            MYT00470
    *  TEKTRONIX 618        -   ENTER 1         *                            MYT00480
    *  TEKTRONIX 4012,4081,4114 -  ENTER 2      *                            MYT00490
    *  NONE OF THE ABOVE    -   ENTER 3         *                            MYT00500
    *  EXIT THE PROGRAM     -   ENTER 4         *                            MYT00510
```

AD-A127 557 EXPANSION OF THE SCAN ENDGAME PROGRAM FOR AIRCRAFT SURVIVABILITY STUDIES A..(U) NAVAL POSTGRADUATE SCHOOL MONTEREY CA J FOURNY DEC 82 2/2

UNCLASSIFIED F/G 9/2 NL



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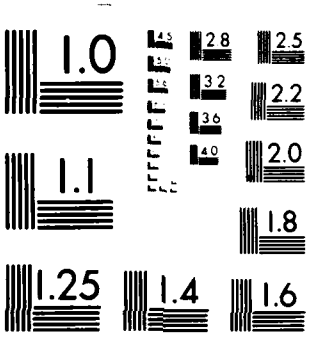
5-83
DTIC



```
    ************************************************                    MYT00520
-STAT3                                                                  MYT00530
&READ VARS &PRM1                                                        MYT00540
&IF  &PRM1 =  1 &GOTO -SETT                                             MYT00550
&IF  &PRM1 =  2 &GOTO -SETT                                             MYT00560
&IF  &PRM1 =  3 &GOTO -NOGRPH                                           MYT00570
&IF  &PRM1 =  4 &GOTO -FIN1                                             MYT00580
&TYPE I NEED A 1,2,OR 3 TO MAKE SELECTION                               MYT00590
&GOTO -STAT3                                                            MYT00600
-NOGRPH                                                                 MYT00610
CLRSCRN                                                                 MYT00620
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*        MYT00630
*                                                                       MYT00640
*    INFO MESSAGE TO USER TO ADVISE NON-GRAPHICS CAPABILITY             MYT00650
*  ---------------------------------------------------------            MYT00660
*                                                                       MYT00670
&BEGTYPE -REP                                                           MYT00680
  SINCE YOU ARE NOT CONNECTED TO ONE OF THE GRAPHICS TERMINALS LISTED   MYT00690
  YOU WILL BE UNABLE TO UTILIZE THE GRAPHICS ROUTINES FOR THIS          MYT00700
  APPLICATION.  YOU CAN HOWEVER STILL SIMULATE THE MISSILE/TARGET       MYT00710
  ENCOUNTER AND GENERATE STATISTICAL DATA FOR THE TERMINAL OR           MYT00720
  PRINTER.  DO YOU STILL WISH TO CONTINUE.                              MYT00730
        ************************************                            MYT00740
        *   REPLY          FUNCTION KEY     *                           MYT00750
        *                                   *                           MYT00760
        *  CONTINUE            1            *                           MYT00770
        *  EXIT PROGRAM        2            *                           MYT00780
        ************************************                            MYT00790
  ENTER THE CORRESPONDING FUNCTION KEY(INTEGER)                         MYT00800
-REP                                                                    MYT00810
&READ VARS &ANS                                                         MYT00820
&IF &ANS = 1 &GOTO -SETT                                                MYT00830
&IF &ANS = 2 &GOTO -FIN1                                                MYT00840
&TYPE I NEED A 1,OR 2                                                   MYT00850
&GOTO -REP                                                              MYT00860
-SETT                                                                   MYT00870
CLRSCRN                                                                 MYT00880
************************************                                    MYT00890
&BEGTYPE -STAT2                                                         MYT00900
  SCAN WAS DEVELOPED TO PREDICT THE PROBABILITY THAT AN AIRCRAFT WILL   MYT00910
  SURVIVE AN ATTACK BY A MISSILE ARMED WITH A FRAGMENTATION WARHEAD.    MYT00920
  THE PROGRAM SIMULATES THE ENCOUNTER BETWEEN A MISSILE AND AN AIRBORNE MYT00930
  TARGET MATHEMATICALLY AND COMPUTES EXPECTED FRAGMENT IMPACT AND       MYT00940
  RESULTING DAMAGE.  YOU WILL BE PROVIDED WITH NECESSARY INSTRUCTIONS   MYT00950
  THROUGHOUT THE PROGRAM.                                               MYT00960
                                                                        MYT00970
  BEFORE COMMENCING IT IS NECESSARY TO ACCESS TEN(10) ADDITIONAL        MYT00980
  CYLINDERS TO RUN THE PROGRAM.  THIS PROCEDURE IS BEING AUTOMATICALLY  MYT00990
```

```
  UNDERTAKEN FOR YOU AT PRESENT.                                                MYT01000
                                                                                MYT01010
  ACCESS TIME VARIES FROM 30 TO 180 SECONDS DEPENDING ON SYSTEM USAGE.          MYT01020
  ************************************************************                  MYT01030
                        *  PLEASE WAIT  *                                       MYT01040
                        ****************                                        MYT01050
-STAT2                                                                          MYT01060
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*               MYT01070
*                                                                               MYT01080
*  ACCESS TEXT LIBRARIES AND LINK TO TEKTRONIX AND GRAF77 DISKS                 MYT01090
*  ------------------------------------------------------------                 MYT01100
*                                                                               MYT01110
CP DEFINE T3350 AS 193 CYL 10                                                   MYT01120
&BEGSTACK -END1                                                                 MYT01130
YES                                                                             MYT01140
TEMP                                                                            MYT01150
-END1                                                                           MYT01160
SET CMSTYPE HT                                                                  MYT01170
FORMAT 193 C                                                                    MYT01180
SET CMSTYPE RT                                                                  MYT01190
GETFMADR                                                                        MYT01200
&READ VARS &STAR &MODE2 &CUU                                                    MYT01210
CP LINK GRAF77 191 &CUU RR                                                      MYT01220
ACC &CUU &MODE2                                                                 MYT01230
GETFMADR                                                                        MYT01240
&READ VARS &STAR &MODE3 &CUU                                                    MYT01250
CP LINK MAINTEK 191 &CUU RR                                                     MYT01260
ACC &CUU &MODE3                                                                 MYT01270
&LB1 = GRAFLIB                                                                  MYT01280
&LB2 = TEKTRON                                                                  MYT01290
GLOBAL TXTLIB MOD2EEH FORTMOD2 NONIMSL CMSLIB IMSLSP &LB1 &LB2                  MYT01300
&TYPE  ... ACCESS IS NOW COMPLETE ...                                           MYT01310
&TYPE  ***************************                                           MYT01320
&PRM2 = 1                                                                       MYT01330
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*               MYT01340
*                                                                               MYT01350
*  USER DISK QUERY OPTION                                                       MYT01360
*  ----------------------                                                       MYT01370
*                                                                               MYT01380
&BEGTYPE -INST                                                                  MYT01390
  DO YOU WANT A SUMMARY OF YOUR DISK SPACE ALLOCATION                           MYT01400
            ********** ******************                                       MYT01410
            *   REPLY       FUNCTION KEY   *                                    MYT01420
            *   -----       ------------   *                                    MYT01430
            *    YES            1          *                                    MYT01440
            *    NO             2          *                                    MYT01450
            ********** ******************                                       MYT01460
  ENTER THE CORRESPONDING FUNCTION KEY(INTEGER)                                 MYT01470
```

```
-INST                                                                    MYT01480
&READ VARS &DISKP                                                        MYT01490
&IF &DISKP = 1 &GOTO -QUER1                                              MYT01500
&IF &DISKP = 2 &GOTO -QUER2                                              MYT01510
&TYPE I NEED A 1, OR 2                                                   MYT01520
&GOTO -INST                                                              MYT01530
-QUER1                                                                   MYT01540
CLRSCRN                                                                  MYT01550
QUERY DISK                                                               MYT01560
&TYPE   HIT THE 'ENTER' KEY WHEN YOU ARE READY TO CONTINUE               MYT01570
&TYPE   ************************************************                 MYT01580
&READ VARS &KEY3                                                         MYT01590
-QUER2                                                                   MYT01600
**********************************                                       MYT01610
CLRSCRN                                                                  MYT01620
&BEGTYPE -STAT5                                                          MYT01630
  THE FOLLOWING LEVELS OF USER FAMILIARITY ARE TAKEN INTO CONSIDERATION  MYT01640
  *** NOVICE ** INTERMEDIARY ** EXPERIENCED ***                          MYT01650
 *THE NOVICE LEVEL IS RECOMMENDED FOR FIRST TIME USERS UNTIL AN           MYT01660
  UNDERSTANDING OF THE BASIC COMMANDS AND FAMILIARITY WITH AVAILABLE      MYT01670
  OUTPUT DATA IS ACHEIVED.                                               MYT01680
 *INTERMEDIARY LEVEL WILL PROVIDE ADDITIONAL CAPABILITY OF USER DESIGNEDMYT01690
  WARHEAD AND ENCOUNTER CONDITIONS AS WELL AS ADDITIONAL GRAPHICS        MYT01700
  OPTIONS.                                                               MYT01710
 *EXPERIENCED LEVEL WILL ALLOW XEDIT CAPABILITY OF DATA FILES DIRECTLY    MYT01720
  AND FULL FLEXIBILITY OF COMMANDS AND OPTIONS.                          MYT01730
      ********************************                                   MYT01740
      *  USER LEVEL        FUNCTION KEY  *                               MYT01750
      *                                   *                              MYT01760
      *  NOVICE            1             *                              MYT01770
      *  INTERMEDIARY      2             *                              MYT01780
      *  EXPERIENCED       3             *                              MYT01790
      *  EXIT THE PROGRAM  4             *                              MYT01800
      ********************************                                   MYT01810
  SELECT THE CORRESPONDING FUNCTION KEY.                                 MYT01820
 -STAT5                                                                  MYT01830
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*         MYT01840
*                                                                        MYT01850
*    IDENTIFY USER LEVEL AND SET USER FLAGS                              MYT01860
* ------------------------------------------                             MYT01870
*                                                                        MYT01880
&READ VARS &LEVL                                                         MYT01890
&IF &LEVL GE 4 &GOTO -DIAG                                               MYT01900
&IF &LEVL LT 1 &GOTO -DIAG                                               MYT01910
&GOTO -CONT                                                              MYT01920
-DIAG                                                                    MYT01930
&IF &LEVL = 4 &GOTO -FIN                                                 MYT01940
&TYPE  I NEED A 1,2,3,OR 4                                               MYT01950
```

```
&GOTO -STAT5                                                                    MYT01960
-CONT                                                                           MYT01970
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*               MYT01980
*                                                                               MYT01990
*  SELECT APPROPRIATE TARGET AND AND COPY TO GEOM FILE                          MYT02000
*  ---------------------------------------------------                          MYT02010
*                                                                               MYT02020
CLRSCRN                                                                         MYT02030
&BEGTYPE -STAT4                                                                 MYT02040
  THE FOLLOWING AIRBORNE TARGETS ARE AVAILABLE FOR YOUR SELECTION               MYT02050
          **********************************                                    MYT02060
          *     TARGET              FUNCTION KEY  *                             MYT02070
          *                                       *                             MYT02080
          *     ------              ------------  *                             MYT02090
          *     BOX                       1       *                             MYT02100
          *     A-7                       2       *                             MYT02110
          *     BOM-107                   3       *                             MYT02120
          *     SPECIAL TARGET (*SEE PROF.BALL    *                             MYT02130
          *     FOR AUTHORITY FIRST)      4       *                             MYT02140
          **********************************                                    MYT02150
  ENTER THE CORRESPONDING FUNCTION KEY(INTEGER)                                 MYT02160
-STAT4                                                                          MYT02170
&READ VARS &TAR                                                                 MYT02180
&IF &TAR = 1 &GOTO -TARG1                                                       MYT02190
&IF &TAR = 2 &GOTO -TARG2                                                       MYT02200
&IF &TAR = 3 &GOTO -TARG3                                                       MYT02210
&IF &TAR = 4 &GOTO -TARG4                                                       MYT02220
&TYPE  I NEED A 1,2,OR 3                                                        MYT02230
&GOTO -STAT4                                                                    MYT02240
-TARG1                                                                          MYT02250
COPY BOX DATA B GEOM DATA C                                                     MYT02260
&SIZE = 17.0                                                                    MYT02270
&GOTO -LDGEN                                                                    MYT02280
-TARG2                                                                          MYT02290
COPY A7 DATA B GEOM DATA C                                                      MYT02300
COPY GEOM DATA C = = =(UNPA REPL                                                MYT02310
&SIZE = 272.0                                                                   MYT02320
&GOTO -LDGEN                                                                    MYT02330
-TARG3                                                                          MYT02340
COPY BOM107 DATA B GEOM DATA C                                                  MYT02350
COPY GEOM DATA C = = =(UNPA REPL                                                MYT02360
&SIZE = 110.0                                                                   MYT02370
&GOTO -LDGEN                                                                    MYT02380
-TARG4                                                                          MYT02390
&TYPE TYPE IN THE CODED NAME OF YOUR TARGET                                     MYT02400
&TYPE **********************************                                        MYT02410
&READ STRING &TNME                                                              MYT02420
STATE &TNME DATA B                                                              MYT02430
&IF &RC ¬= 0 &GOTO -NOTRG                                                       MYT02440
```

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COPY &TNME BATA B GEOM DATA C                                                    MYT02440
COPY GEOM DATA C = = =( UNPA REPL                                                MYT02450
&TYPE TYPE IN THE MAXIMUM EXTENSION OF YOUR TARGET                               MYT02460
&TYPE ************************************************                           MYT02470
&READ VARS &SIZE                                                                 MYT02480
&GOTO -LDGEN                                                                     MYT02490
-NOTRG                                                                           MYT02500
CLRSCRN                                                                          MYT02510
&TYPE THERE IS NO TARGET &TNME STORED ON DISK                                    MYT02520
&GOTO -CONT                                                                      MYT02530
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*                 MYT02540
*                                                                                MYT02550
*   SET FILE DEFINITIONS FOR NPGEN PROGRAM                                       MYT02560
*  ---------------------------------------                                       MYT02570
*                                                                                MYT02580
-LDGEN                                                                           MYT02590
FILEDEF 1 TERMINAL (PERM                                                         MYT02600
FILEDEF 5 DISK GEOM DATA C (PERM                                                 MYT02610
FILEDEF 6 DISK IBUG FORTRAN C (RECFM FA BLOCK 131 PERM                           MYT02620
FILEDEF 7 TERMINAL (PERM                                                         MYT02630
FILEDEF 30 DISK TARGET DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM                MYT02640
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*                 MYT02650
*                                                                                MYT02660
*    LOAD IN TARGET LINE GENERATOR NPGEN                                         MYT02670
*  ---------------------------------------                                       MYT02680
*                                                                                MYT02690
CLRSCRN                                                                          MYT02700
&TYPE   THE GRAPHICS PREPROCESSOR IS NOW LOADING AUTOMATICALLY                   MYT02710
&TYPE   ******************************************************                   MYT02720
&STACK &SIZE                                                                     MYT02730
&STACK &LEVL                                                                     MYT02740
LOAD MYGEN                                                                       MYT02750
START *                                                                          MYT02760
CLRSCRN                                                                          MYT02770
&BEGTYPE -STAT7                                                                  MYT02780
   A SUMMARY OF GENERATED TARGET LINES IS AVAILABLE                              MYT02790
          **************************************                                 MYT02800
          *                                    *                                 MYT02810
          *                          FUNCTION KEY  *                           MYT02820
          *                          ------------  *                           MYT02830
          *  NC SUMMARY/CONTINUE           1       *                           MYT02840
          *  SUMMARY AT TERMINAL ONLY      2       *                           MYT02850
          *  SUMMARY AT PRINTER ONLY       3       *                           MYT02860
          *  SUMMARY AT PTR AND TERM       4       *                           MYT02870
          *  EXIT THE PROGRAM              5       *                           MYT02880
          **************************************                                 MYT02890
   SELECT CORRESPONDING FUNCTION KEY                                             MYT02900
-STAT7                                                                           MYT02910
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*                 MYT02920
```

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*                                                                              MYT02920
*    DETERMINE IF IBUG SUMMARY DESIRED BY USER                                 MYT02930
*  ---------------------------------------------                               MYT02940
*                                                                              MYT02950
&READ VARS &SUM1                                                              MYT02960
&IF &SUM1 = 1 &GOTO -CONT1                                                    MYT02970
&IF &SUM1 = 2 &GOTO -CLST1                                                    MYT02980
&IF &SUM1 = 3 &GOTO -PLST1                                                    MYT02990
&IF &SUM1 = 4 &GOTO -CLST1                                                    MYT03000
&IF &SUM1 = 5 &GOTO -FIN                                                      MYT03010
&TYPE I NEED A 1,2,3,4, OR 5                                                  MYT03020
&GOTO -STAT7                                                                  MYT03030
-CLST1                                                                        MYT03040
TYPE IBUG FORTRAN C                                                           MYT03050
&TYPE    HIT THE 'ENTER' KEY WHEN YOU ARE READY TO CONTINUE                   MYT03060
&TYPE    ************************************************                     MYT03070
&READ VARS &KEY1                                                              MYT03080
&IF &SUM1 >= 4 &GOTO -CONT1                                                   MYT03090
-PLST1                                                                        MYT03100
&TYPE  SUMMARY 'IBUG ' IS NOW BEING SENT TO PRINTER AS REQUESTED              MYT03110
PRINT IBUG FORTRAN C                                                          MYT03120
-CONT1                                                                        MYT03130
*GOTO -CONT4                                                                  MYT03140
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*              MYT03150
*                                                                             MYT03160
*  BEGIN MISSILE FILE MANIPULATION BASED ON USER LEVEL FLAG                   MYT03170
*  --------------------------------------------------------                   MYT03180
*                                                                              MYT03190
-JMP2                                                                         MYT03200
CLRSCRN                                                                       MYT03210
&IF &LEVL = 1 &GOTO -STAT11                                                   MYT03220
&IF &LEVL = 3 &GOTO -STAE2                                                    MYT03230
&IF &LEVL = 2 &BEGTYPE -STAE1                                                 MYT03240
  AT THE INTERMEDIARY LEVEL YOU HAVE THE OPTION OF MANIPULATING THE CASE      MYT03250
  AND WARHEAD FILES THROUGH AN INTERACTIVE PROGRAM CALLED "CHANGE".           MYT03260
  FUNCTION KEYS ARE PROVIDED TO CONTROL THE EDITING PROCEDURE.                MYT03270
                                                                              MYT03280
  WE WILL BEGIN WITH THE "CASE DATA " FILE                                    MYT03290
  ****************************************                                    MYT03300
-STAE1                                                                        MYT03310
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*              MYT03320
*                                                                             MYT03330
*  INTERMEDIARY USER LEVEL                                                    MYT03340
*  -----------------------                                                    MYT03350
*                                                                              MYT03360
&CALL -SUB1 CASE                                                              MYT03370
CLRSCRN                                                                       MYT03380
&TYPE  WE WILL NOW SELECT THE "WARHEAD" DATA FILE                             MYT03390
```

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&TYPE  ***************************************                                MYT03400
&CALL -SUB1 WARHEAD                                                           MYT03410
&GOTO -CONT3                                                                  MYT03420
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*      MYT03430
*                                                                             MYT03440
*   EXPERIENCED USER LEVEL                                                    MYT03450
*  -------------------------                                                  MYT03460
*                                                                             MYT03470
-STAE2                                                                        MYT03480
&BEGTYPE -STAE3                                                               MYT03490
  AT THE EXPERIENCED LEVEL YOU HAVE THE OPTION OF MANIPULATING THE CASE MYT03500
  AND WARHEAD FILES DIRECTLY.  FUNCTION KEYS ARE PROVIDED ONLY TO ACCESSMYT03510
  THE FILES AND PLACE YOU IN THE XEDIT MODE.                                  MYT03520
                                                                              MYT03530
    SELECTION OF " CASE FILE "                                                MYT03540
    *************************                                                 MYT03550
-STAE3                                                                        MYT03560
&CALL -SUB1 CASE                                                              MYT03570
CLRSCRN                                                                       MYT03580
&TYPE      SELECTION OF "WARHEAD FILE"                                        MYT03590
&TYPE      ***************************                                        MYT03600
&CALL -SUB1 WARHEAD                                                           MYT03610
&GOTO -CONT3                                                                  MYT03620
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*      MYT03630
*                                                                             MYT03640
*   SUBROUTINE INTERACTION AND CONTROL FOR TWO UPPER LEVELS OF USER           MYT03650
*  ------------------------------------------------------------------         MYT03660
*                                                                             MYT03670
-SUB1                                                                         MYT03680
-SUBB                                                                         MYT03690
&BEGTYPE -STAE4                                                               MYT03700
      ************************************                                    MYT03710
      *       FILES              FUNCTION KEY  *                              MYT03720
      *                          ------------  *                             MYT03730
      * USE DEFAULT FILE               1       *                              MYT03740
      * USE CUSTOM FILE                2       *                              MYT03750
      * MODIFY DEFAULT FILE            3       *                              MYT03760
      * MODIFY A CUSTOM FILE           4       *                              MYT03770
      * EXIT THE PROGRAM               5       *                              MYT03780
      ************************************                                    MYT03790
SELECT THE CORRESPONDING FUNCTION KEY                                         MYT03800
-STAE4                                                                        MYT03810
&READ VARS &EDT                                                               MYT03820
&IF &EDT = 1 &GOTO -SDEF                                                      MYT03830
&IF &EDT = 2 &GOTO -STAE5                                                     MYT03840
&IF &EDT = 3 &GOTO -STAE6                                                     MYT03850
&IF &EDT = 4 &GOTO -STAE7                                                     MYT03860
&IF &EDT = 5 &GOTO -FIN                                                       MYT03870
```

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&TYPE I NEED A 1,2,3,4, CR 5                                                    MYT03880
&GOTO -STAE4                                                                    MYT03890
*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC MYT03900
-STAE5                                                                          MYT03910
&TYPE TYPE IN THE FILENAME OF YOUR CUSTOM FILE ???                              MYT03920
&TYPE ********************************************                              MYT03930
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*        MYT03940
*                                                                               MYT03950
*  CHECK VALIDITY OF USER FILENAME                                              MYT03960
*  ------------------------------------------------------------------------     MYT03970
*                                                                               MYT03980
&READ STRING &FNME                                                              MYT03990
STATE &FNME DATA A                                                              MYT04000
&IF &RC ¬= 0 &GOTO -NOFILE                                                      MYT04010
COPY &FNME DATA A &1 DATA C                                                     MYT04020
CLRSCRN                                                                         MYT04030
&RETURN                                                                         MYT04040
-NOFILE                                                                         MYT04050
CLRSCRN                                                                         MYT04060
&TYPE THERE IS NO FILE &FNME DATA A ON YOUR DISK                                MYT04070
&GOTO -SLBB                                                                     MYT04080
*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC MYT04090
-STAE6                                                                          MYT04100
COPY &1 DATA B = = C                                                            MYT04110
&IF &LEVL = 2 &GOTO -STAS1                                                      MYT04120
XEDIT &1 DATA C                                                                 MYT04130
&RETURN                                                                         MYT04140
-STAS1                                                                          MYT04150
&IF &1 = CASE &GOTO -LODE1                                                      MYT04160
FILEDEF 5 TERMINAL (PERM                                                        MYT04170
FILEDEF 6 TERMINAL (PERM                                                        MYT04180
FILEDEF 12 DISK WARHEAD DATA C (PERM                                            MYT04190
LOAD FRCG1                                                                      MYT04200
START *                                                                         MYT04210
&EEGTYPE -STAE8                                                                 MYT04220
   DO YOU WANT A PERMANENT COPY OF THIS MODIFIED FILE ON YOUR A DISK            MYT04230
              **************************                                        MYT04240
              *       YES      1       *                                        MYT04250
              *        NO      2       *                                        MYT04260
              **************************                                        MYT04270
   SELECT FUNCTION KEY                                                          MYT04280
-STAE8                                                                          MYT04290
&READ VARS &WEDT                                                                MYT04300
&IF &WEDT = 1 &GOTO -CPYFW                                                      MYT04310
&IF &WEDT = 2 &GOTO -WRET                                                       MYT04320
&TYPE I NEED A 1,OR 2                                                           MYT04330
&GOTO -STAE8                                                                    MYT04340
-WRET                                                                           MYT04350
```

```
&RETURN
*CCMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*
*
*  CCPY MODIFIED FILE ON USER'S A DISK
*
* -----------------------------------------------------------------
-CPYFW
&TYPE  TYPE IN THE NAME YOU WANT TO CALL THIS NEW FILE
&TYPE  ***********************************************
&READ STRING &FNME
COPY &1 DATA C &FNME DATA A
&RETURN
-LCDE1
FILEDEF 5 TERMINAL (PERM
FILEDEF 6 TERMINAL (PERM
FILEDEF 10 DISK CASE DATA C (PERM
LCAD PROG2
START *
&BEGTYPE -STAE8
   DO YOU WANT A PERMANENT COPY OF THIS MODIFIED FILE CN YOUR A DISK
              **************************
              *       YES        1      *
              *        NO        2      *
              **************************
   SELECT FUNCTION KEY
-STAE8
&READ VARS &CEDT
&IF &CEDT = 1 &GCTO -CPYFC
&IF &CEDT = 2 &GCTO -CRET
&TYPE I NEED A 1,CR 2
&GOTO -STAE8
-CRET
&RETURN
*CCMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-CCMMENT*
*
*  CCPY MCDIFIED FILE ON USER'S A DISK
*
* -----------------------------------------------------------------
-CPYFC
&TYPE  TYPE IN THE NAME YOU WANT TO CALL THIS NEW FILE
&TYPE  ***********************************************
&READ STRING &FNME
COPY &1 DATA C &FNME DATA A
&RETURN
*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
-STAE7
&TYPE  TYPE IN THE NAME OF YOUR CUSTOM FILE ???
&TYPE  *****************************************
```

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&READ STRING &FNME                                                              MYT0484C
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*               MYT04850
*                                                                               MYT04860
*  CHECK VALIDITY OF USER FILENAME                                              MYT04870
* ------------------------------------------------------------------            MYT04880
*                                                                               MYT04890
STATE &FNME DATA A                                                              MYT04900
&IF &RC ¬= 0 &GOTO -NOFILE                                                      MYT04910
&IF &LEVL = 2 &GOTO -STAS2                                                      MYT04920
XEDIT &FNME DATA A                                                              MYT04930
COPY &FNME DATA A &1 DATA C                                                     MYT04940
&RETURN                                                                         MYT04950
-STAS2                                                                          MYT04960
&IF &1 = CASE &GOTO -LODE1                                                      MYT04970
FILEDEF 5 TERMINAL (PERM                                                        MYT04980
FILEDEF 6 TERMINAL (PERM                                                        MYT04990
FILEDEF 12 DISK &FNME DATA A (PERM                                              MYT05000
LOAD PROG2                                                                      MYT05010
START *                                                                         MYT05020
COPY &FNME DATA A &1 DATA C                                                     MYT05030
&RETURN                                                                         MYT05040
-LODE1                                                                          MYT05050
FILEDEF 5 TERMINAL (PERM                                                        MYT05060
FILEDEF 6 TERMINAL (PERM                                                        MYT05070
FILEDEF 10 DISK &FNME DATA A (PERM                                              MYT05080
LOAD PROG1                                                                      MYT05090
START *                                                                         MYT05100
COPY &FNME DATA A &1 DATA C                                                     MYT05110
&RETURN                                                                         MYT05120
**************************                                                      MYT05130
-SDEF                                                                           MYT05140
COPY &1 DATA B = = C                                                            MYT05150
&RETURN                                                                         MYT05160
-STAT11                                                                         MYT05170
COPY CASE DATA B = = C                                                          MYT05180
COPY WARHEAD DATA B = = C                                                       MYT05190
&TYPE A DEFAULT SET OF WARHEAD AND CASE FILES WAS GENERATED FOR YOU.            MYT05200
&TYPE ***************************************************************          MYT05210
**************************************                                          MYT05220
-CONT3                                                                          MYT05230
CLRSCRN                                                                         MYT05240
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*               MYT05250
*                                                                               MYT05260
*  FILE DEFINITIONS FOR SCANMAIN PROGRAM                                        MYT05270
* ---------------------------------------                                       MYT05280
*                                                                               MYT05290
FILEDEF 1 DISK SCAN1 FORTRAN C (RECFM FA BLOCK 131 PERM                         MYT05300
FILEDEF 5 DISK CASE DATA C (PERM                                                MYT05310
```

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FILEDEF 6 DISK SCAN2 FORTRAN C (RECFM FA BLOCK 131 PERM                    MYT05320
FILEDEF 11 DISK GEOM DATA C (PERM                                         MYT05330
FILEDEF 12 DISK WARHEAD DATA C (PERM                                      MYT05340
FILEDEF 19 DISK IMPACT DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM         MYT05350
FILEDEF 30 DISK FILE DATA C (PERM                                         MYT05360
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*          MYT05370
*                                                                         MYT05380
*  LOAD SCANMAIN AND CALCULATE HIT DATA FOR STATS AND GRAPHICS            MYT05390
*  ----------------------------------------------------------             MYT05400
*                                                                         MYT05410
&TYPE  THE MISSILE ENCOUNTER SIMULATOR AND SHOT-LINE GENERATOR ARE NOW    MYT05420
&TYPE  READY TO BE LOADED                                                 MYT05430
&TYPE  ***************************************************************  MYT05440
&BEGTYPE -EXMSG1                                                          MYT05450
  DO YOU WANT TO CONTINUE WITH THE APPLICATION                            MYT05460
            **************************                                    MYT05470
            *   REPLY      FUNCTION KEY  *                                MYT05480
            *   -----      ------------  *                                MYT05490
            *    YES            1        *                                MYT05500
            *    NO             2        *                                MYT05510
            **************************                                    MYT05520
  ENTER THE CORRESPONDING FUNCTION KEY(INTEGER)                           MYT05530
-EXMSG1                                                                   MYT05540
&READ VARS &XANS1                                                         MYT05550
&IF &XANS1 = 1 &GOTO -LOSC                                                MYT05560
&IF &XANS1 = 2 &GOTO -FIN                                                 MYT05570
&TYPE I NEED A 1, OR 2                                                    MYT05580
&GOTO -EXMSG1                                                             MYT05590
-LOSC                                                                     MYT05600
LOAD SCANMAIN                                                             MYT05610
START *                                                                   MYT05620
CLRSCRN                                                                   MYT05630
&BEGTYPE -STAT6                                                           MYT05640
  A SUMMARY OF TARGET DATA IS AVAILABLE                                   MYT05650
          ***************************************                         MYT05660
          *        SCAN1                FUNCTION KEY  *                   MYT05670
          *                             ------------  *                   MYT05680
          *  NO SUMMARY/CONTINUE             1       *                   MYT05690
          *  SUMMARY AT TERMINAL ONLY        2       *                   MYT05700
          *  SUMMARY AT PRINTER ONLY         3       *                   MYT05710
          *  SUMMARY AT PTR AND TERM         4       *                   MYT05720
          *  EXIT THE PROGRAM                5       *                   MYT05730
          ***************************************                         MYT05740
  SELECT CORRESPONDING FUNCTION KEY                                       MYT05750
-STAT6                                                                    MYT05760
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*         MYT05770
*                                                                         MYT05780
*   DETERMINE IF SCAN1 SUMMARY DESIRED BY USER                            MYT05790
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*  ------------------------------------------                                  MYT05800
*                                                                              MYT05810
&READ VARS &SUM2                                                               MYT05820
&IF &SUM2 = 1 &GOTO -CONT2                                                     MYT05830
&IF &SUM2 = 2 &GOTO -CLST2                                                     MYT05840
&IF &SUM2 = 3 &GOTO -PLST2                                                     MYT05850
&IF &SUM2 = 4 &GOTO -CLST2                                                     MYT05860
&IF &SUM2 = 5 &GOTO -FIN                                                       MYT05870
&TYPE I NEED A 1,2,3,4, OR 5                                                   MYT05880
&GOTO -STAT6                                                                   MYT05890
-CLST2                                                                         MYT05900
TYPE SCAN1 FORTRAN C                                                           MYT05910
&TYPE    HIT THE 'ENTER' KEY WHEN YOU ARE READY TO CONTINUE                    MYT05920
&TYPE    ************************************************                      MYT05930
&READ VARS &KEY2                                                               MYT05940
&IF &SUM2 .= 4 &GOTO -CONT2                                                    MYT05950
-PLST2                                                                         MYT05960
&TYPE   SUMMARY 'SCAN1' IS NOW BEING SENT TO PRINTER AS REQUESTED              MYT05970
PRINT SCAN1 FORTRAN C                                                          MYT05980
-CONT2                                                                         MYT05990
CLRSCRN                                                                        MYT06000
&BEGTYPE -STAT8                                                                MYT06010
  A SUMMARY OF MISSILE DATA AND SURVIVAL PROBABILITIES IS AVAILABLE            MYT06020
        ****************************************                               MYT06030
        *        SCAN2                FUNCTION KEY  *                          MYT06040
        *                                           *                          MYT06050
        *  NO SUMMARY/CONTINUE            1        *                          MYT06060
        *  SUMMARY AT TERMINAL ONLY       2        *                          MYT06070
        *  SUMMARY AT PRINTER ONLY        3        *                          MYT06080
        *  SUMMARY AT PTR AND TERM        4        *                          MYT06090
        *  EXIT THE PROGRAM               5        *                          MYT06100
        ****************************************                               MYT06110
  SELECT CORRESPONDING FUNCTION KEY                                            MYT06120
-STAT8                                                                         MYT06130
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*      MYT06140
*                                                                              MYT06150
*    DETERMINE IF SCAN2 SUMMARY DESIRED BY USER                                MYT06160
*    ------------------------------------------                                MYT06170
*                                                                              MYT06180
&READ VARS &SUM3                                                               MYT06190
&IF &SUM3 = 1 &GOTO -CONT4                                                     MYT06200
&IF &SUM3 = 2 &GOTO -CLST3                                                     MYT06210
&IF &SUM3 = 3 &GOTO -PLST3                                                     MYT06220
&IF &SUM3 = 4 &GOTO -CLST3                                                     MYT06230
&IF &SUM3 = 5 &GOTO -FIN                                                       MYT06240
&TYPE I NEED A 1,2,3,4, OR 5                                                   MYT06250
&GOTO -STAT8                                                                   MYT06260
-CLST3                                                                         MYT06270
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TYPE SCAN2 FORTRAN C                                                    MYT06280
&TYPE    HIT THE 'ENTER' KEY WHEN YOU ARE READY TO CONTINUE             MYT06290
&TYPE    ***************************************************            MYT06300
&READ VARS &KEY2                                                        MYT06310
&IF &SUM3 ¬= 4 &GOTO -CONT4                                             MYT06320
-PLST3                                                                  MYT06330
&TYPE  SUMMARY 'SCAN2' IS NOW BEING SENT TO PRINTER AS REQUESTED        MYT06340
PRINT SCAN2 FORTRAN C                                                   MYT06350
-CONT4                                                                  MYT06360
&IF &PRM1 =  3 &GOTO -CMPL1                                             MYT06370
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*        MYT06380
*                                                                       MYT06390
*   FILE DEFINITIONS FOR NPDRAW PROGRAM                                 MYT06400
*   -----------------------------------                                 MYT06410
*                                                                       MYT06420
FILEDEF 5 TERMINAL (PERM                                                MYT06430
FILEDEF 6 TERMINAL (PERM                                                MYT06440
FILEDEF 19 DISK  IMPACT  DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM     MYT06450
FILEDEF 20 DISK  FRAG DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM        MYT06460
FILEDEF 30 DISK  TARGET  DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM     MYT06470
FILEDEF 31 DISK  STORE DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM       MYT06480
FILEDEF 35 DISK  MASK DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM        MYT06490
FILEDEF 37 DISK  TEMTGT  DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM     MYT06500
FILEDEF 38 DISK  TEMEXP  DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM     MYT06510
FILEDEF 39 DISK  TEMHIT  DATA C (RECFM VBS LRECL 127 BLOCK 131 PERM     MYT06520
CLRSCRN                                                                 MYT06530
&TYPE THE GRAPHICS DRIVER IS NOW BEING LOADED                           MYT06540
&TYPE ***************************************                           MYT06550
&BEGTYPE -EXMSG2                                                        MYT06560
  DO YOU WANT TO CONTINUE WITH THE APPLICATION                          MYT06570
             ***************************                                MYT06580
             *   REPLY       FUNCTION KEY  *                            MYT06590
             *                             *                            MYT06600
             *   -YES-       ----I----     *                            MYT06610
             *    NO             2         *                            MYT06620
             ***************************                                MYT06630
  ENTER THE CORRESPONDING FUNCTION KEY                                  MYT06640
-EXMSG2                                                                 MYT06650
&READ VARS &XANS2                                                       MYT06660
&IF &XANS2 = 1 &GOTO -LDSP                                              MYT06670
&IF &XANS2 = 2 &GOTO -FIN                                               MYT06680
&TYPE I NEED A 1, OR 2                                                  MYT06690
&GOTO -EXMSG2                                                           MYT06700
-LDSP                                                                   MYT06710
&STACK &LEVL                                                            MYT06720
&STACK &PRM1                                                            MYT06730
&STACK &PRM2                                                            MYT06740
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*        MYT06750
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*                                                                                MYT06760
*   LOAD THE MAIN GRAPHICS PROGRAM NPDRAW                                        MYT06770
*   ------------------------------------                                         MYT06780
*                                                                                MYT06790
LOAD MYDRAW                                                                      MYT06800
START *                                                                          MYT06810
-CMPL1                                                                           MYT06820
CLRSCRN                                                                          MYT06830
&EECTYPE -CMPL2                                                                  MYT06840
  THIS COMPLETES THE SCAN APPLICATION.  YOU MAY BRANCH BACK TO SELECT            MYT06850
  A NEW TARGET IF YOU HAVE AUTHORIZATION OR MODIFY YOUR WARHEAD AND              MYT06860
  CASE DATA FOR DIFFERENT MISSILE DESIGN OR GENERATE A 3-D PROBABILITY           MYT06870
  ENVELOPE IF YOU HAVE PLENTY OF TIME.                                           MYT06880
       **********************************                                        MYT06890
       *        BRANCH          FUNCTION KEY  *                                  MYT06900
       *                                      *                                  MYT06910
       *                        ------------  *                                  MYT06920
       *   CHANGE USER LEVEL        1         *                                  MYT06930
       *   SELECT NEW TARGET        2         *                                  MYT06940
       *   MODIFY MISSILE DATA      3         *                                  MYT06950
       *   RELOAD GRAPHICS PROGRAM  4         *                                  MYT06960
       *   3-D PLOTTING             5         *                                  MYT06970
       *   EXIT PROGRAM             6         *                                  MYT06980
       **********************************                                        MYT06990
-CMPL2                                                                           MYT07000
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*                 MYT07010
*                                                                                MYT07020
*   SELECT BRANCHING OPTIONS FOR RERUNS OR 3-D PLOTS                             MYT07030
*   ------------------------------------------------                             MYT07040
*                                                                                MYT07050
&READ VARS &FRM3                                                                 MYT07060
&IF &PRM3 = 1 &GOTO -BRCH1                                                       MYT07070
&IF &PRM3 = 2 &GOTO -BRCH2                                                       MYT07080
&IF &PRM3 = 3 &GOTO -BRCH3                                                       MYT07090
&IF &PRM3 = 4 &GOTO -LOSP                                                        MYT07100
&IF &PRM3 = 5 &GOTO -PLOT                                                        MYT07110
&IF &PRM3 = 6 &GOTO -FIN                                                         MYT07120
&TYPE I NEED A 1,2,3,4,5,OR 6                                                    MYT07130
&GOTO -CMPL2                                                                     MYT07140
-BRCH1                                                                           MYT07150
ERASE GEOM DATA C                                                                MYT07160
ERASE CASE DATA C                                                                MYT07170
ERASE WARHEAD DATA C                                                             MYT07180
&GOTO -QUER2                                                                     MYT07190
-BRCH2                                                                           MYT07200
ERASE GEOM DATA C                                                                MYT07210
ERASE CASE DATA C                                                                MYT07220
ERASE WARHEAD DATA C                                                             MYT07230
&GOTO -CONT
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-BRCH3                                                                  MYT07240
ERASE CASE DATA C                                                       MYT07250
ERASE WARHEAD DATA C                                                    MYT07260
&GOTO -JMP2                                                             MYT07270
-PLOT                                                                   MYT07280
&TYPE PLOT PACKAGE NOT YET WRITTEN                                      MYT07290
-FIN                                                                    MYT07300
*COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT-COMMENT*        MYT07310
*                                                                       MYT07320
*  RELEASE PREVIOUSLY ACCESSED DISKS AND LIBRARIES                      MYT07330
* ---------------------------------------------                         MYT07340
*                                                                       MYT07350
REL 193 (DET                                                            MYT07360
REL &MODE2 (DET                                                         MYT07370
REL &MODE3 (DET                                                         MYT07380
-FIN1                                                                   MYT07390
REL 192 (DET                                                            MYT07400
CLRSCRN                                                                 MYT07410
&EXIT                                                                   MYT07420
C                                                                       MYT07430
C     THIS PROGRAM INTERACTIVELY CHANGES THE WARHEAD DATA FILE PARAMETERMYT07440
C                                                                       MYT07450
C                                                                       MYT07460
      COMMON /TAPSTW/  NUNWT                                            MYT07470
      REWIND NUNWT                                                      MYT07480
      COMMON/BLST/FUSBLR,FUSBL1,FUSBL2,WNGBLR,WNGPT1(3),WNGPT2(3)       MYT07490
      COMMON/FUSE/FUZTYP,FUZPOS,DELAY,FUZANG,SIGFUZ,FUZRAN              MYT07500
      COMMON/WARHD/ZONMIN(6),ZONMAX(6),VMIN(6),VMAX(6),FRAGMS(6),       MYT07510
     *FRAGNO(6),NMAT(6),XWH(6),NUMZON,NMASS                             MYT07520
C     DIMENSION SHAP(4)                                                 MYT07530
      INTEGER FUZTYP,NUMZON,NZON,ADZON,NMASS,NMAT,SET                   MYT07540
      NZON=1CO                                                          MYT07550
C  ***************************************************                  MYT07560
C  *                                                 *                  MYT07570
C  *     FORMAT STATEMENTS FOR FRAGMENT PARAMETERS   *                  MYT07580
C  *                                                 *                  MYT07590
C  ***************************************************                  MYT07600
 1000 FORMAT(2X,'THE WARHEAD DATA FILE CONTAINS FRAGMENT SPRAY PARAME',  MYT07610
     *'TERS,'/2X,'FUZING PARAMETERS AND BLAST ENVELOPE GEOMETRY AROUND',MYT07620
     *' THE TARGET.'/2X,'AT THE INTERMEDIARY LEVEL YOU HAVE THE OPTION',MYT07630
     *' OF SELECTIVELY'/2X,'MODIFYING ANY ONE OR MORE OF THE SEGMENTS ',MYT07640
     *'BELOW WHICH CONTAIN'/2X,'THE PRIMARY WARHEAD PARAMETERS.')        MYT07650
 1010 FORMAT(2X,'ERROR IN WARHEAD DATA FILE')                           MYT07660
 1020 FORMAT(2X,'CURRENT VALUE IS ',I10)                                MYT07670
 1030 FORMAT(6X,'*************************'/6X,'* CHANGE VALUE    1   ',MYT07680
     *'  */6X'*    NO CHANGE     2     *'/6X'*************************'MYT07690
     */2X'SELECT FUNCTION KEY')                                         MYT07700
 1040 FORMAT(2X,'ENTER NEW VALUE')                                      MYT07710
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 1060 FORMAT(2X,'I NEED A 1,OR 2')                                        MYT07720
 1050 FORMAT(2X,'POLAR ZONE MUST BE AN INTEGER VALUE BETWEEN 1 AND 6')    MYT07730
 1015 FORMAT(8X,'---INTEGER VALUE---'/3X,'NUMBER OF POLAR ZONES')         MYT07740
 1100 FORMAT(8X,'----REAL VALUE----'/3X,'LOWER ANGLE OF POLAR ZONE',I2)   MYT07750
 1150 FORMAT(9X,'----REAL VALUE----'/3X,'UPPER ANGLE OF POLAR ZONE',I2)   MYT07760
 1200 FORMAT(9X,'----REAL VALUE----'/3X,'LOWER FRAGMENT VELOCITY-FT/S')   MYT07770
 1250 FORMAT(9X,'----REAL VALUE----'/3X,'UPPER FRAGMENT VELOCITY-FT/S')   MYT07780
 1300 FORMAT(9X,'----REAL VALUE----'/3X,'FRAGMENT MASS IN GRAINS')        MYT07790
 1350 FORMAT(9X,'----REAL VALUE----'/3X,'NUMBER OF FRAGMENTS')            MYT07800
 1400 FORMAT(9X,'----REAL VALUE----'/3X,'INITIAL FRAGMENT CENTER POSIT',MYT07810
     *'ION WRT WARHEAD CENTER')                                           MYT07820
 1450 FORMAT(9X,'---INTEGER VALUE---'/9X,'FRAGMENT MATERIAL TYPE'/2X,    MYT07830
     *'1=MAGNESIUM 2=ALUMINUM 3=TITANIUM 4=FACE HARDENED STEEL 5=MILD',  MYT07840
     *' STEEL'/2X,'6=HARDENED STEEL 7=LEXAN 8=PLEXIGLASS 9=DORAN 10=',   MYT07850
     *'BULLET RESISTANT GLASS')                                           MYT07860
C1500 FORMAT(9X,'--CHARACTER VALUE--'/3X,'FRAG SHAPE')                    MYT07870
C   **********************************                                    MYT07880
C   *                                *                                    MYT07890
C   *     INPUT/OUTPUT FORMAT STATEMENTS     *                           MYT07900
C   *                                *                                    MYT07910
C   **********************************                                    MYT07920
 2000 FORMAT(2I10)                                                        MYT07930
 2005 FORMAT(I10)                                                         MYT07940
 2010 FORMAT(F10.3)                                                       MYT07950
 2015 FORMAT(F6.2)                                                        MYT07960
 2020 FORMAT(I4)                                                          MYT07970
 2025 FORMAT(A4)                                                          MYT07980
 2030 FORMAT(F10.2)                                                       MYT07990
 2100 FORMAT(7F10.3,I4,A4)                                                MYT08000
 2200 FORMAT(I10,5F10.3,3F6.2)                                            MYT08010
 2300 FORMAT(7F10.3/3F10.2)                                               MYT08020
C   ***************************************                              MYT08030
C   *                                     *                              MYT08040
C   *     FORMAT STATEMENTS FOR FUZING PARAMETERS     *                  MYT08050
C   *                                     *                              MYT08060
C   ***************************************                              MYT08070
 3100 FORMAT(9X,'---INTEGER VALUE---'/3X,'FUZE TYPE')                     MYT08080
 3150 FORMAT(9X,'----REAL VALUE----'/3X,'TDD POSITION WRT WARHEAD ',      MYT08090
     *' CENTER IN FEET')                                                  MYT08100
 3200 FORMAT(9X,'----REAL VALUE----'/3X,'FUZE DELAY IN SECONDS')          MYT08110
 3250 FORMAT(9X,'----REAL VALUE----'/3X,'FUZE CONE HALF-ANGLE-DEGREES')   MYT08120
 3300 FORMAT(9X,'----REAL VALUE----'/3X,'STANDARD DEVIATION OF ANGLE')    MYT08130
 3350 FORMAT(9X,'----REAL VALUE----'/2X,'FUZE CUTOFF RANGE IN FEET***',   MYT08140
     *'IF FUZE TYPE IS 0 THEN FCR=0.0')                                   MYT08150
 3400 FORMAT(9X,'----REAL VALUE----'/3X,'MISSILE BODY RADIUS IN FEET')    MYT08160
 3450 FORMAT(9X,'----REAL VALUE----'/3X,'DISTANCE FROM WARHEAD CENTER',   MYT08170
     *' TO CONTACT FUZE IN FEET')                                         MYT08180
 3500 FORMAT(9X,'----REAL VALUE----'/3X,'DISTANCE FROM WARHEAD CENTER',   MYT08190
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     *' TC TAIL END IN FEET')                                            MYT08200
C    ***************************************************                 MYT08210
C    *                                                 *                 MYT08220
C    *     FORMAT STATEMENTS FOR BLAST ENVELOPE        *                 MYT08230
C    *                                                 *                 MYT08240
C    ***************************************************                 MYT08250
 3550 FORMAT(9X,'----REAL VALUE----'/3X,'FUSELAGE BLAST RADIUS IN FEET')MYT08260
 3600 FORMAT(9X,'----REAL VALUE----'/3X,'FUSELAGE BLAST LENGTH FROM CG',MYT08270
     *' FORWARD IN FEET')                                                MYT08280
 3650 FORMAT(9X,'----REAL VALUE----'/3X,'FUSALAGE BLAST LENGTH FROM CG',MYT08290
     *' AFT IN FEET')                                                    MYT08300
 3700 FORMAT(9X,'----REAL VALUE----'/3X,'WING BLAST RADIUS IN FEET')     MYT08310
C    *****************************************************               MYT08320
C    *                                                   *               MYT08330
C    *     FORMAT STATEMENTS FOR PRINT SUMMARY           *               MYT08340
C    *                                                   *               MYT08350
C    *****************************************************               MYT08360
 4100 FORMAT(9X,'----REAL VALUE----'/3X,'ENDPOINT OF WING BLAST CENTER',MYT08370
     *'LINE NEAR TARGET FUSELAGE'/3X,'X-COMPONENT')                      MYT08380
 4150 FORMAT(9X,'----REAL VALUE----'/3X,'ENDPOINT OF WING BLAST CENTER',MYT08390
     *'LINE NEAR TARGET FUSELAGE'/3X,'Y-COMPONENT')                      MYT08400
 4200 FORMAT(9X,'----REAL VALUE----'/3X,'ENDPOINT OF WING BLAST CENTER',MYT08410
     *'LINE NEAR TARGET FUSELAGE'/3X,'Z-COMPONENT')                      MYT08420
 4250 FORMAT(9X,'----REAL VALUE----'/3X,'ENDPOINT OF WING BLAST CENTER',MYT08430
     *'LINE NEAREST WING TIP'/3X,'X-COMPONENT')                          MYT08440
 4300 FORMAT(9X,'----REAL VALUE----'/3X,'ENDPOINT OF WING BLAST CENTER',MYT08450
     *'LINE NEAREST WING TIP'/3X,'Y-COMPONENT')                          MYT08460
 4350 FORMAT(9X,'----REAL VALUE----'/3X,'ENDPOINT OF WING BLAST CENTER',MYT08470
     *'LINE NEAREST WING TIP'/3X,'Z-COMPONENT')                          MYT08480
 4800 FORMAT(2X,'THIS CONCLUDES THE WARHEAD DATA INPUT')                 MYT08490
 4805 FORMAT(6X,'*************************************'/6X,              MYT08500
     *'* MODIFY FRAGMENT PARAMETERS    1   *'/6X,                        MYT08510
     *'*  MODIFY FUZING PARAMETERS     2   *'/6X,                        MYT08520
     *'*  MODIFY BLAST ENVELOPE        3   *'/6X,                        MYT08530
     *'*  PRINT SUMMARY OF FILE        4   *'/6X,                        MYT08540
     *'*   EDITING COMPLETED           5   *'/6X,                        MYT08550
     *'*************************************')                           MYT08560
 4815 FORMAT(2X,'I NEED A 1,2,OR 3')                                     MYT08570
 4850 FORMAT(2X,'NUMBER OF POLAR ZONES ON FILE',I2)                      MYT08580
 4860 FORMAT(/15X,'POLAR ZONE NUMBER',I2/5X,'LOWER ANGLE',F10.2,'DEG.', MYT08590
     *'DEGREES'/5X,'UPPER ANGLE',F10.2,'DEGREES'/5X,'LOWER VELOCITY OF',MYT08600
     *' FRAGMENTS',F10.2,'FT/SEC'/5X,'UPPER VELOCITY OF FRAGMENTS',F9.2,MYT08610
     *'FT/SEC'/5X,'FRAGMENT MASS',F10.2,'GRAINS'/5X,'NUMBER OF FRAGMEN',MYT08620
     *'TS IN POLAR ZONE',F10.2/5X,'INITIAL FRAGMENT CENTER POSITION',    MYT08630
     *F10.2,'FEET'/5X,'FRAGMENT MATERIAL TYPE',I2)                       MYT08640
 4870 FORMAT(/2X,'ENTER A NUMERIC KEY TO CONTINUE'/10X,'***********')    MYT08650
 4880 FORMAT(5X,'FUZE TYPE',I2/5X,'TDD POSITION WRT TO WARHEAD CENTER', MYT08660
     *F10.2,'FEET'/5X,'FUZE DELAY',F10.2,'SECONDS'/5X'FUZE CONE HALF-', MYT08670
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     *'ANGLE',F10.2,'DEGREES'/5X,'STANDARD DEVIATION OF ANGLE',F10.2,    MYT08680
     *'DEGREES'/5X,'FUZE CUTTOFF RANGE',F10.2,'FEET'/5X,'MISSILE RAD',   MYT08690
     *'IUS',F10.2,'FEET'/5X,'FUZE TC WARHEAD CENTER',F10.2,'FEET'/5X,    MYT08700
     *'TAIL TO WARHEAD CENTER',F10.2,'FEET')                             MYT08710
      CALL FRTCMS('CLRSCRN ')                                           MYT08720
 4890 FORMAT(5X,'FUSELAGE BLAST RADIUS',F6.2,'FEET'/5X,'BLAST LENGTH',  MYT08730
     *' FORWARD CF CG',F6.2,'FEET'/5X,'BLAST LENGTH AFT OF CG',F6.2,     MYT08740
     *'FEET'/5X,'WING BLAST RADIUS',F6.2,'FEET'/5X,'ENDPOINT OF WING',   MYT08750
     *' BLAST CENTERLINE NEAREST FUSELAGE'/5X,' X=',F6.2,' Y=',F6.2,     MYT08760
     *' Z=',F6.2/5X,'ENDPCINT OF WING BLAST CENTERLINE NEAREST WING',    MYT08770
     *' TIP'/5X,' X=',F6.2,' Y=',F6.2,' Z=',F6.2)                        MYT08780
C                                                                       MYT08790
C                                                                       MYT08800
C  **********************************************                       MYT08810
C  *                                            *                       MYT08820
C  *    READ IN NUMBER CF POLAR ZONES           *                       MYT08830
C  *                                            *                       MYT08840
C  **********************************************                       MYT08850
      WRITE(6,10CC)                                                     MYT08860
  10  CONTINUE                                                          MYT08870
      READ(NUNWT,2000) NUMZON,NMASS                                     MYT08880
C                                                                       MYT08890
      IF (NUMZON.LE.0) GO TO 40                                         MYT08900
      IF (NUMZON.GT.0) GC TO 50                                         MYT08910
  40  WRITE(6,1010)                                                     MYT08920
      GC TO 5000                                                        MYT08930
  50  CONTINUE                                                          MYT08940
      DC 100 I=1,NUMZON                                                 MYT08950
       READ(NUNWT,2100) ZONMIN(I),ZONMAX(I),VMIN(I),VMAX(I),FRAGMS(I),  MYT08960
     * FRAGNC(I),XWH(I),NMAT(I),SHAP                                     MYT08970
 100  CONTINUE                                                          MYT08980
       READ(NUNWT,2200)FUZTYP,FUZPOS,DELAY,FUZANG,SIGFUZ,FUZRAN,PADMSL,  MYT08990
     *PCSNOS,POSTAL                                                     MYT09000
      READ(NUNWT,2300)FUSBLR,FUSBL1,FUSBL2,WNGBLR,WNGPT1(1),WNGPT1(2),  MYT09010
     *WNGPT1(3),WNGPT2(1),WNGPT2(2),WNGPT2(3)                           MYT09020
      GO TO 3806                                                        MYT09030
C  **********************************************                       MYT09040
C  *                                            *                       MYT09050
C  *    SELECT NEW VALUE OF POLAR ZONE          *                       MYT09060
C  *                                            *                       MYT09070
C  **********************************************                       MYT09080
 105  CALL FRTCMS('CLRSCRN ')                                           MYT09090
      WRITE(6,1015)                                                     MYT09100
      WRITE(6,1020) NUMZON                                              MYT09110
      WRITE(6,1030)                                                     MYT09120
 120  CONTINUE                                                          MYT09130
      READ(5,*) J                                                       MYT09140
      IF (J.EQ.1) GO TO 160                                             MYT09150
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      IF (J.EQ.2) GO TO 170                                              MYT09160
      WRITE (6,1060)                                                     MYT09170
      GO TO 120                                                          MYT09180
  160 WRITE(6,1040)                                                      MYT09190
  165 CONTINUE                                                           MYT09200
      READ(5,*) NZON                                                     MYT09210
      GO TO 175                                                          MYT09220
  170 CONTINUE                                                           MYT09230
      NZON=NUMZON                                                        MYT09240
C     ***************************************************              MYT09250
C     *                                                 *              MYT09260
C     *    CALCULATE DIFFERENCE BETWEEN OLD AND NEW     *              MYT09270
C     *    NUMZON VALUE AND SELECTIVELY BRANCH          *              MYT09280
C     *                                                 *              MYT09290
C     ***************************************************              MYT09300
  175 SET=NZON-NUMZON                                                    MYT09310
C     WRITE(6,2005) SET                                                MYT09320
      IF (SET.LT.-2.OR.SET.GT.3) GO TO 200                               MYT09330
      IF (SET.LE.0) GO TO 300                                            MYT09340
      GO TO 400                                                          MYT09350
  200 WRITE(6,1050)                                                      MYT09360
      GO TO 165                                                          MYT09370
C     ***************************************************************  MYT09380
C     *                                                               *  MYT09390
C     *    NO CHANGE IN NUMZON/DETERMINE FRAGMENT PARAMETERS          *  MYT09400
C     *                                                               *  MYT09410
C     ***************************************************************  MYT09420
  300 DO 350 I=1,NZON                                                    MYT09430
      WRITE(6,1100) I                                                    MYT09440
      RMVAL=ZONMIN(I)                                                    MYT09450
      CALL CHR(RMVAL)                                                    MYT09460
      ZONMIN(I)=RMVAL                                                    MYT09470
      WRITE(6,1150) I                                                    MYT09480
      RMVAL=ZONMAX(I)                                                    MYT09490
      CALL CHR(RMVAL)                                                    MYT09500
      ZONMAX(I)=RMVAL                                                    MYT09510
      WRITE(6,1200)                                                      MYT09520
      RMVAL=VMIN(I)                                                      MYT09530
      CALL CHR(RMVAL)                                                    MYT09540
      VMIN(I)=RMVAL                                                      MYT09550
      WRITE(6,1250)                                                      MYT09560
      RMVAL=VMAX(I)                                                      MYT09570
      CALL CHR(RMVAL)                                                    MYT09580
      VMAX(I)=RMVAL                                                      MYT09590
      WRITE(6,1300)                                                      MYT09600
      RMVAL=FRAGMS(I)                                                    MYT09610
      CALL CHR(RMVAL)                                                    MYT09620
      FRAGMS(I)=RMVAL                                                    MYT09630
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      WRITE(6,1350)                                                    MYT09640
      RMVAL=FRAGNC(I)                                                  MYT09650
      CALL CHR(RMVAL)                                                  MYT09660
      FRAGNO(I)=RMVAL                                                  MYT09670
      WRITE(6,1400)                                                    MYT09680
      RMVAL=XWH(I)                                                     MYT09690
      CALL CHR(RMVAL)                                                  MYT09700
      XWH(I)=RMVAL                                                     MYT09710
      WRITE(6,1450)                                                    MYT09720
      IMVAL=NMAT(I)                                                    MYT09730
      CALL CHI(IMVAL)                                                  MYT09740
      NMAT(I)=IMVAL                                                    MYT09750
  350 CONTINUE                                                         MYT09760
      GO TO 3805                                                       MYT09770
C     ***************************************************************  MYT09780
C     *                                                             *  MYT09790
C     *    NUMZON VALUE CHANGED/DETERMINE FRAGMENT PARAMETERS       *  MYT09800
C     *                                                             *  MYT09810
C     ***************************************************************  MYT09820
  400 I=1                                                              MYT09830
  405 IF (I.GT.NZON) GO TO 3805                                        MYT09840
      IF (I.GT.NUMZON) GO TO 425                                       MYT09850
      WRITE(6,1100) I                                                  MYT09860
      RMVAL=ZONMIN(I)                                                  MYT09870
      CALL CHR(RMVAL)                                                  MYT09880
      ZONMIN(I)=RMVAL                                                  MYT09890
      WRITE(6,1150) I                                                  MYT09900
      RMVAL=ZONMAX(I)                                                  MYT09910
      CALL CHR(RMVAL)                                                  MYT09920
      ZONMAX(I)=RMVAL                                                  MYT09930
      WRITE(6,1200)                                                    MYT09940
      RMVAL=VMIN(I)                                                    MYT09950
      CALL CHR(RMVAL)                                                  MYT09960
      VMIN(I)=RMVAL                                                    MYT09970
      WRITE(6,1250)                                                    MYT09980
      RMVAL=VMAX(I)                                                    MYT09990
      CALL CHR(RMVAL)                                                  MYT10000
      VMAX(I)=RMVAL                                                    MYT10010
      WRITE(6,1300)                                                    MYT10020
      RMVAL=FRAGMS(I)                                                  MYT10030
      CALL CHR(RMVAL)                                                  MYT10040
      FRAGMS(I)=RMVAL                                                  MYT10050
      WRITE(6,1350)                                                    MYT10060
      RMVAL=FRAGNC(I)                                                  MYT10070
      CALL CHR(RMVAL)                                                  MYT10080
      FRAGNO(I)=RMVAL                                                  MYT10090
      WRITE(6,1400)                                                    MYT10100
      RMVAL=XWH(I)                                                     MYT10110
```

```
      CALL CHR(RMVAL)                                                   MYT10120
      XWH(I)=RMVAL                                                      MYT10130
      WRITE(6,1450)                                                     MYT10140
      IMVAL=NMAT(I)                                                     MYT10150
      CALL CHI(IMVAL)                                                   MYT10160
      NMAT(I)=IMVAL                                                     MYT10170
      I=I+1                                                             MYT10180
      GO TO 405                                                         MYT10190
  425 IF (I.GT.NZON) GO TO 3805                                         MYT10200
      WRITE(6,1100)                                                     MYT10210
      CALL CRETR(RMVAL)                                                 MYT10220
      ZCNMIN(I)=RMVAL                                                   MYT10230
      WRITE(6,1150)                                                     MYT10240
      CALL CRETR(RMVAL)                                                 MYT10250
      ZCNMAX(I)=RMVAL                                                   MYT10260
      WRITE(6,1200)                                                     MYT10270
      CALL CRETR(RMVAL)                                                 MYT10280
      VMIN(I)=RMVAL                                                     MYT10290
      WRITE(6,1250)                                                     MYT10300
      CALL CRETR(RMVAL)                                                 MYT10310
      VMAX(I)=RMVAL                                                     MYT10320
      WRITE(6,1300)                                                     MYT10330
      CALL CRETR(RMVAL)                                                 MYT10340
      FRAGMS(I)=RMVAL                                                   MYT10350
      WRITE(6,1350)                                                     MYT10360
      CALL CRETR(RMVAL)                                                 MYT10370
      FRAGNO(I)=RMVAL                                                   MYT10380
      WRITE(6,1400)                                                     MYT10390
      CALL CRETR(RMVAL)                                                 MYT10400
      XWH(I)=RMVAL                                                      MYT10410
      WRITE(6,1450)                                                     MYT10420
      CALL CRETI(IMVAL)                                                 MYT10430
      NMAT(I)=IMVAL                                                     MYT10440
      I=I+1                                                             MYT10450
      GO TO 405                                                         MYT10460
C *************************                                           MYT10470
C *                       *                                           MYT10480
C *  FUZING PARAMETERS    *                                           MYT10490
C *                       *                                           MYT10500
C *************************                                           MYT10510
  500 CALL FFTCMS('CLRSCRN ')                                           MYT10520
      WRITE(6,3100)                                                     MYT10530
      IMVAL=FUZTYP                                                      MYT10540
      CALL CHI(IMVAL)                                                   MYT10550
      FUZTYP=IMVAL                                                      MYT10560
      WRITE(6,3150)                                                     MYT10570
      RMVAL=FUZPCS                                                      MYT10580
      CALL CHR(RMVAL)                                                   MYT10590
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      FUZPOS=RMVAL                                                      MYT10600
      WRITE(6,3200)                                                     MYT10610
      RMVAL=DELAY                                                       MYT10620
      CALL CHR(RMVAL)                                                   MYT10630
      DELAY=RMVAL                                                       MYT10640
      WRITE(6,3250)                                                     MYT10650
      RMVAL=FUZANG                                                      MYT10660
      CALL CHR(RMVAL)                                                   MYT10670
      FUZANG=RMVAL                                                      MYT10680
C     WRITE(6,3300)                                                     MYT10690
C     RMVAL=SIGFLZ                                                      MYT10700
C     CALL CHR(RMVAL)                                                   MYT10710
C     SIGFUZ=RMVAL                                                      MYT10720
      WRITE(6,3350)                                                     MYT10730
      RMVAL=FUZRAN                                                      MYT10740
      CALL CHR(RMVAL)                                                   MYT10750
      FUZRAN=RMVAL                                                      MYT10760
      WRITE(6,3400)                                                     MYT10770
      RMVAL=RADMSL                                                      MYT10780
      CALL CHR(RMVAL)                                                   MYT10790
      RADMSL=RMVAL                                                      MYT10800
      WRITE(6,3450)                                                     MYT10810
      RMVAL=POSNOS                                                      MYT10820
      CALL CHR(RMVAL)                                                   MYT10830
      PCSNOS=RMVAL                                                      MYT10840
      WRITE(6,3500)                                                     MYT10850
      RMVAL=POSTAL                                                      MYT10860
      CALL CHR(RMVAL)                                                   MYT10870
      POSTAL=RMVAL                                                      MYT10880
      GO TO 3805                                                        MYT10890
C ********************                                                  MYT10900
C *                  *                                                MYT10910
C *  BLAST ENVELOPE  *                                                MYT10920
C *                  *                                                MYT10930
C ********************                                                MYT10940
 600  CALL FFTCMS('CLRSCRN ')                                          MYT10950
      WRITE(6,3550)                                                     MYT10960
      RMVAL=FUSBLR                                                      MYT10970
      CALL CHR(RMVAL)                                                   MYT10980
      FUSBLR=RMVAL                                                      MYT10990
      WRITE(6,3600)                                                     MYT11000
      RMVAL=FUSBL1                                                      MYT11010
      CALL CHR(RMVAL)                                                   MYT11020
      FUSBL1=RMVAL                                                      MYT11030
      WRITE(6,3650)                                                     MYT11040
      RMVAL=FUSBL2                                                      MYT11050
      CALL CHR(RMVAL)                                                   MYT11060
      FUSBL2=RMVAL                                                      MYT11070
```

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      WRITE(6,3700)                                                     MYT11080
      RMVAL=WNGBLR                                                      MYT11090
      CALL CHR(RMVAL)                                                   MYT11100
      WNGBLR=RMVAL                                                      MYT11110
      WRITE(6,4100)                                                     MYT11120
      RMVAL=WNGPT1(1)                                                   MYT11130
      CALL CHR(RMVAL)                                                   MYT11140
      WNGPT1(1)=RMVAL                                                   MYT11150
      WRITE(6,4150)                                                     MYT11160
      RMVAL=WNGPT1(2)                                                   MYT11170
      CALL CHR(RMVAL)                                                   MYT11180
      WNGPT1(2)=RMVAL                                                   MYT11190
      WRITE(6,4200)                                                     MYT11200
      RMVAL=WNGPT1(3)                                                   MYT11210
      CALL CHR(RMVAL)                                                   MYT11220
      WNGPT1(3)=RMVAL                                                   MYT11230
      WRITE(6,4250)                                                     MYT11240
      RMVAL=WNGPT2(1)                                                   MYT11250
      CALL CHR(RMVAL)                                                   MYT11260
      WNGPT2(1)=RMVAL                                                   MYT11270
      WRITE(6,4300)                                                     MYT11280
      RMVAL=WNGPT2(2)                                                   MYT11290
      CALL CHR(RMVAL)                                                   MYT11300
      WNGPT2(2)=RMVAL                                                   MYT11310
      WRITE(6,4350)                                                     MYT11320
      RMVAL=WNGPT2(3)                                                   MYT11330
      CALL CHR(RMVAL)                                                   MYT11340
      WNGPT2(3)=RMVAL                                                   MYT11350
C                                                                       MYT11360
C                                                                       MYT11370
C                                                                       MYT11380
C                                                                       MYT11390
C     ************************************                              MYT11400
C     *                                  *                              MYT11410
C     *     SELECT USER ACTION           *                              MYT11420
C     *                                  *                              MYT11430
C     ************************************                              MYT11440
 3805 CALL FFTCMS('CLRSCRN ')                                           MYT11450
 3806 WRITE(6,4805)                                                     MYT11460
 3808 CONTINUE                                                          MYT11470
      READ(5,*) IANS                                                    MYT11480
      IF (IANS.EQ.1) GO TO 105                                          MYT11490
      IF (IANS.EQ.2) GO TO 500                                          MYT11500
      IF (IANS.EQ.3) GO TO 600                                          MYT11510
      IF (IANS.EQ.4) GO TO 3810                                         MYT11520
      IF (IANS.EQ.5) GO TO 3815                                         MYT11530
      WRITE(6,4815)                                                     MYT11540
      GO TO 3808                                                        MYT11550
```

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C   ***************************************                                  MYT11560
C   *                                     *                                  MYT11570
C   *     PRINT SUMMARY OF CURRENT VALUES *                                  MYT11580
C   *                                     *                                  MYT11590
C   ***************************************                                  MYT11600
 3810 IF (NZON.EQ.100) NZON=NUMZON                                           MYT11610
      CALL FRTCMS('CLRSCRN ')                                                MYT11620
      WRITE(6,4850) NZON                                                     MYT11630
 3812 DO 3814 I=1,NZON                                                       MYT11640
      WRITE(6,4860) I,ZONMIN(I),ZONMAX(I),VMIN(I),VMAX(I),FRAGMS(I),         MYT11650
     *FRAGNO(I),XWH(I),NMAT(I)                                               MYT11660
      WRITE(6,4870)                                                          MYT11670
      READ(5,*) J                                                            MYT11680
      CALL FRTCMS('CLRSCRN ')                                                MYT11690
 3814 CONTINUE                                                               MYT11700
      WRITE(6,4880) FUZTYP,FUZPOS,DELAY,FUSANG,SIGFUZ,FUZRAN,RADMSL,         MYT11710
     *POSNOS,POSTAL                                                          MYT11720
      WRITE(6,4870)                                                          MYT11730
      READ(5,*) J                                                            MYT11740
      CALL FRTCMS('CLRSCRN ')                                                MYT11750
      WRITE(6,4890) FUSBLR,FUSBL1,FUSBL2,WNGBLR,WNGPT1(1),WNGPT1(2),         MYT11760
     *WNGPT1(3),WNGPT2(1),WNGPT2(2),WNGPT2(3)                                MYT11770
      WRITE(6,4870)                                                          MYT11780
      READ(5,*) J                                                            MYT11790
      CALL FRTCMS('CLRSCRN ')                                                MYT11800
      GO TO 3805                                                             MYT11810
C   ***************************************                                  MYT11820
C   *                                     *                                  MYT11830
C   *     RECAP FILE AND STORE ON DISK    *                                  MYT11840
C   *                                     *                                  MYT11850
C   ***************************************                                  MYT11860
 3815 IF (NZON.EQ.100) NZON=NUMZON                                           MYT11870
      REWIND NUNWT                                                           MYT11880
      WRITE(NUNWT,2000) NUMZON,NMASS                                         MYT11890
      DO 3850 I=1,NZON                                                       MYT11900
      WRITE(NUNWT,2100) ZONMIN(I),ZONMAX(I),VMIN(I),VMAX(I),FRAGMS(I),       MYT11910
     * FRAGNO(I),XWH(I),NMAT(I),SHAP                                         MYT11920
 3850 CONTINUE                                                               MYT11930
      WRITE(NUNWT,2200) FUZTYP,FUZPOS,DELAY,FUZANG,SIGFUZ,FUZRAN,RADMSL,     MYT11940
     *POSNOS,POSTAL                                                          MYT11950
      WRITE(NUNWT,2300) FUSBLR,FUSBL1,FUSBL2,WNGBLR,WNGPT1(1),WNGPT1(2),     MYT11960
     *WNGPT1(3),WNGPT2(1),WNGPT2(2),WNGPT2(3)                                MYT11970
      ENDFILE NUNWT                                                          MYT11980
 5000 CONTINUE                                                               MYT11990
      STOP                                                                   MYT12000
      END                                                                    MYT12010
C   ***************************************************************          MYT12020
C   *                                                             *          MYT12030
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C  *     SUB TO HANDLE INTEGER VALUE CHANGES TO WARHEAD FILE    *          MYT12040
C  *                                                           *          MYT12050
C  *************************************************************          MYT12060
      SUBROUTINE CHI(INTVL)                                               MYT12070
C                                                                         MYT12080
      WRITE(6,1020) INTVL                                                 MYT12090
      WRITE(6,1030)                                                       MYT12100
 50   CONTINUE                                                            MYT12110
      READ(5,*) J                                                         MYT12120
      IF (J.EQ.1) GO TO 55                                                MYT12130
      IF (J.EQ.2) GO TO 60                                                MYT12140
      WRITE (6,1060)                                                      MYT12150
      GO TO 50                                                            MYT12160
 55   WRITE(6,1040)                                                       MYT12170
      READ(5,*) INTVL                                                     MYT12180
 60   CONTINUE                                                            MYT12190
      CALL FFTCMS('CLRSCRN ')                                             MYT12200
      RETURN                                                              MYT12210
 1020 FORMAT(2X,'CURRENT VALUE IS ',I10)                                  MYT12220
 1030 FORMAT(4X,'  ************************'/6X,'* CHANGE VALUE   1     ',MYT12230
     *'*'/6X,'*    NO CHANGE   2     *'/6X,'************************',   MYT12240
     */2X'SELECT FUNCTION KEY')                                           MYT12250
 1040 FORMAT(2X,'ENTER NEW VALUE')                                        MYT12260
 1060 FORMAT(2X,'I NEED A 1,OR 2')                                        MYT12270
      END                                                                 MYT12280
C  *************************************************************          MYT12290
C  *                                                           *          MYT12300
C  *     SUB TO HANDLE REAL VALUE CHANGES TO WARHEAD FILE      *          MYT12310
C  *                                                           *          MYT12320
C  *************************************************************          MYT12330
      SUBROUTINE CHR(RELVL)                                               MYT12340
C                                                                         MYT12350
      REAL RELVL                                                          MYT12360
      WRITE(6,1020) RELVL                                                 MYT12370
      WRITE(6,1030)                                                       MYT12380
 50   CONTINUE                                                            MYT12390
      READ(5,*) J                                                         MYT12400
      IF (J.EQ.1) GO TO 55                                                MYT12410
      IF (J.EQ.2) GO TO 60                                                MYT12420
      WRITE (6,1060)                                                      MYT12430
      GO TO 50                                                            MYT12440
 55   WRITE(6,1040)                                                       MYT12450
      READ(5,*) RELVL                                                     MYT12460
 60   CONTINUE                                                            MYT12470
      CALL FFTCMS('CLRSCRN ')                                             MYT12480
      RETURN                                                              MYT12490
 1020 FORMAT(2X,'CURRENT VALUE IS ',F10.2)                                MYT12500
 1030 FORMAT(4X,'  ************************'/6X,'* CHANGE VALUE   1     ',MYT12510
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     *'*'/6X,'*    NO CHANGE   2    *'/6X,'************************',     MYT12520
     */2X'SELECT FUNCTION KEY')                                          MYT12530
 1040 FORMAT(2X,'ENTER NEW VALUE')                                       MYT12540
 1060 FORMAT(2X,'I NEED A 1,OR 2')                                       MYT12550
C2010 FORMAT(F10.2)                                                      MYT12560
      END                                                                MYT12570
C     ***************************************************               MYT12580
C     *                                                 *               MYT12590
C     *     SUB TO CREATE NEW REAL VALUES FOR WARHEAD FILE    *         MYT12600
C     *                                                 *               MYT12610
C     ***************************************************               MYT12620
      SUBROUTINE CRETR(RELVL)                                            MYT12630
C                                                                        MYT12640
      WRITE(6,1040)                                                      MYT12650
      READ(5,*) RELVL                                                    MYT12660
      CONTINUE                                                           MYT12670
      CALL FRTCMS('CLRSCRN ')                                            MYT12680
      RETURN                                                             MYT12690
 1040 FORMAT(2X,'ENTER NEW VALUE')                                       MYT12700
C2010 FORMAT(F10.3)                                                      MYT12710
      END                                                                MYT12720
C     ***************************************************               MYT12730
C     *                                                 *               MYT12740
C     *     SUB TO CREATE NEW INTEGER VALUES FOR WARHEAD FILE    *      MYT12750
C     *                                                 *               MYT12760
C     ***************************************************               MYT12770
      SUBROUTINE CRETI(INTVL)                                            MYT12780
C                                                                        MYT12790
      WRITE(6,1040)                                                      MYT12800
      READ(5,*) INTVL                                                    MYT12810
      CONTINUE                                                           MYT12820
      CALL FRTCMS('CLRSCRN ')                                            MYT12830
      RETURN                                                             MYT12840
 1040 FORMAT(2X,'ENTER NEW VALUE')                                       MYT12850
      END                                                                MYT12860
C                                                                        MYT12870
      BLOCK DATA                                                         MYT12880
      COMMON /TAPSTW/  NUNWT                                             MYT12890
      DATA NUNWT/ 12 /                                                   MYT12900
      END                                                                MYT12910
C                                                                        MYT12920
C     THIS PROGRAM INTERACTIVELY CHANGES THE CASE DATA FILE PARAMETERS   MYT12930
C                                                                        MYT12940
C                                                                        MYT12950
      COMMON /TAPSTC/  NUNCT                                             MYT12960
      REWIND NUNCT                                                       MYT12970
      INTEGER SENT                                                       MYT12980
      REAL MSP,MSS,MAOA,MAA,MAAS,MPA,MPAS,MAZ,MAZS,MISX,MISY,MISZ        MYT12990
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C     ****************************************                          MYT13000
CC    *                                      *                          MYT13010
CC    *     INITIALIZATION OF VARIABLES      *                          MYT13020
CC    *                                      *                          MYT13030
C     ****************************************                          MYT13040
      SENT=0                                                            MYT13050
      MISX=50.0                                                         MYT13060
      MISY=50.0                                                         MYT13070
      MISZ=50.0                                                         MYT13080
      TCPA=30.0                                                         MYT13090
      TCEP=30.0                                                         MYT13100
C     ****************************************                          MYT13110
CC    *                                      *                          MYT13120
CC    *     INTERACTIVE FORMAT STATEMENTS    *                          MYT13130
CC    *                                      *                          MYT13140
C     ****************************************                          MYT13150
 1000 FORMAT(2X,'THE CASE DATA FILE CONTAINS THE PARAMETERS FOR THE',    MYT13160
     *' ENCOUNTER SCENARIO.'/2X,'THREE(3) TYPES OF TRAJECTORY CAN BE',   MYT13170
     *' SIMULATED AND UP TO SIX(6) POLAR'/2X,'ZONES CAN BE SPECIFIED',   MYT13180
     *' AT THE INTERMEDIARY LEVEL.')                                     MYT13190
 1010 FORMAT(2X,'ERROR IN CASE DATA FILE')                              MYT13200
 1020 FORMAT(2X,'CURRENT VALUE IS ',I10)                                MYT13210
 1030 FORMAT(4X,'  ************************'/6X,'* CHANGE VALUE    1   ',MYT13220
     *'*'/6X,'*    NO CHANGE    2    *'/5X,' ************************',  MYT13230
     */2X'SELECT FUNCTION KEY')                                         MYT13240
 1040 FORMAT(2X,'ENTER NEW VALUE')                                      MYT13250
 1060 FORMAT(2X,'I NEED A 1,CR 2')                                      MYT13260
 1050 FORMAT(2X,'CASE DATA IS COMPLETE')                                MYT13270
 1015 FORMAT(8X,'---INTEGER VALUE---'/8X,'TRAJECTORY TYPE'/3X,'1= SPEC',MYT13280
     *'IFY DETONATION POINT'/3X,'2= SPECIFY CPA'/3X,'3= SPECIFY CEP')    MYT13290
 1100 FORMAT(8X,'---INTEGER VALUE---'/3X,'NUMBER OF ENCOUNTERS')        MYT13300
 1150 FORMAT(9X,'----REAL VALUE----'/3X,'TARGET SPEED')                 MYT13310
 1200 FORMAT(9X,'----REAL VALUE----'/3X,'MISSILE SPEED')                MYT13320
 1250 FORMAT(9X,'----REAL VALUE----'/3X,'MISSILE ANGLE OF ATTACK')      MYT13330
 1300 FORMAT(9X,'----REAL VALUE----'/3X,'MISSILE SIDESLIP')             MYT13340
 1350 FORMAT(9X,'----REAL VALUE----'/3X,' TARGET ANGLE OF ATTACK')      MYT13350
 1400 FORMAT(9X,'----REAL VALUE----'/3X,' TARGET SIDESLIP')             MYT13360
 1450 FORMAT(9X,'----REAL VALUE----'/3X,'ENCOUNTER ALTITUDE')           MYT13370
 1500 FORMAT(9X,'----REAL VALUE----'/3X,'X-COMPONENT DETONATION POINT') MYT13380
 1550 FORMAT(9X,'----REAL VALUE----'/3X,'Y-COMPONENT DETONATION POINT') MYT13390
 1600 FORMAT(9X,'----REAL VALUE----'/3X,'Z-COMPONENT DETONATION POINT') MYT13400
 1650 FORMAT(9X,'----REAL VALUE----'/3X,'CPA ')                         MYT13410
 1700 FORMAT(9X,'----REAL VALUE----'/3X,'CEP ')                         MYT13420
C     ****************************************                          MYT13430
CC    *                                      *                          MYT13440
CC    *     INPUT/OUTPUT FORMAT STATEMENTS   *                          MYT13450
CC    *                                      *                          MYT13460
C     ****************************************                          MYT13470
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 2000 FORMAT(I10,I5)                                                    MYT13480
 2005 FORMAT(I10)                                                       MYT13490
 2100 FORMAT(I1C,7F10.3/8F10.3/7F10.3)                                  MYT13500
 2200 FORMAT(I1C,7F10.3/8F10.3/3F10.3)                                  MYT13510
  210 FORMAT(I1C,7F10.3/8F10.3/7F10.3)                                  MYT13520
  220 FORMAT(I1C,7F10.3/8F10.3/3F10.3)                                  MYT13530
C    ***************************************                           MYT13540
C    *                                     *                           MYT13550
C    *     FORMAT STATEMENTS FOR PRINT SUMMARY                         MYT13560
C    *                                     *                           MYT13570
C    ***************************************                           MYT13580
 4810 FORMAT(2X,'NUMBER OF TRAJECTORIES',I10/2X,'TARGET SPEED',F10.3/2X,MYT13590
     *'MISSILE SPEED',F10.3/2X,'ANGLE OF ATTACK--- TARGET',F10.3,3X,     MYT13600
     *'MISSILE',F10.3/2X,'SIDESLIP ANGLE---TARGET',F10.3,3X,             MYT13610
     *'MISSILE',F10.3/2X,'ENCOUNTER ALTITUDE',F10.3/2X,'X POINT OF ',   MYT13620
     *'DETONATION',F10.3/2X,'Y POINT OF DETONATION',F10.3/2X,'Z POINT',  MYT13630
     *' OF DETONATION',F10.3)                                           MYT13640
 4820 FORMAT(2X,'NUMBER OF TRAJECTORIES',I10/2X,'TARGET SPEED',F10.3/2X,MYT13650
     *'MISSILE SPEED',F10.3/2X,'ANGLE OF ATTACK--- TARGET',F10.3,3X,     MYT13660
     *'MISSILE',F10.3/2X,'SIDESLIP ANGLE---TARGET',F10.3/2X,             MYT13670
     *'ENCOUNTER ALTITUDE',F10.3/2X,'CPA FOR ENCOUNTER',F10.3)           MYT13680
 4830 FORMAT(2X,'NUMBER OF TRAJECTORIES',I10/2X,'TARGET SPEED',F10.3/2X,MYT13690
     *'MISSILE SPEED',F10.3/2X,'ANGLE OF ATTACK--- TARGET',F10.3,3X,     MYT13700
     *'MISSILE',F10.3/2X,'SIDESLIP ANGLE---TARGET',F10.3/2X,             MYT13710
     *'ENCOUNTER ALTITUDE',F10.3/2X,'CPA FOR ENCOUNTER',F10.3)           MYT13720
 4850 FORMAT(2X,'TYPE OF TRAJECTORY',I10)                               MYT13730
 4855 FORMAT(6X,'*************************'/6X,                         MYT13740
     *'*  MODIFY ALL PARAMETERS       1  *'/6X,                         MYT13750
     *'* MODIFY MISSILE PARAMETRERS   2  *'/6X,                         MYT13760
     *'*  PRINT FILE SUMMARY          3  *'/6X,                         MYT13770
     *'*  EDITING COMPLETED           4  *'/6X,                         MYT13780
     *'*************************')                                     MYT13790
 4865 FORMAT(2X,'ENTER ANY NUMERIC KEY TO CONTINUE'/10X,'**********')    MYT13800
 4880 FORMAT(2X,'I NEED A 1,2,3,OR 4')                                  MYT13810
C    ***************************************                           MYT13820
C    *                                     *                           MYT13830
C    *     READ IN TYPE OF TRAJECTORY      *                           MYT13840
C    *                                     *                           MYT13850
C    ***************************************                           MYT13860
      CALL FFTCMS('CLRSCRN ')                                           MYT13870
      WRITE(6,1000)                                                     MYT13880
 10   CONTINUE                                                          MYT13890
      READ(NUNCT,2000) ITRAJ,NPRT                                       MYT13900
C    ***************************************                           MYT13910
C    *                                     *                           MYT13920
C    *     READ IN SELECTED TRAJECTORY FILE*                           MYT13930
C    *                                     *                           MYT13940
C    ***************************************                           MYT13950
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      IF (ITRAJ.LT.0) GO TO 40                                          MYT13960
      IF (ITRAJ.GT.0) GO TO 50                                          MYT13970
      WRITE(6,1050)                                                     MYT13980
      GO TO 5000                                                        MYT13990
 40   WRITE(6,1010)                                                     MYT14000
      GO TO 5000                                                        MYT14010
 50   CONTINUE                                                          MYT14020
      IF (ITRAJ.EQ.1) GO TO 180                                         MYT14030
      IF (ITRAJ.EQ.2) GO TO 280                                         MYT14040
      IF (ITRAJ.EQ.3) GO TO 380                                         MYT14050
 180  READ(NUNIT,2100) JNUM,TSPD,TROL,TPIT,TYAW,MSP,MAA,MAAS,MPA,MPAS,  MYT14060
     *MAZ,MAZS,ALT,AIMX,AIMY,AIMZ,MISX,MISY,MISZ,TACA,TSS,MAOA,MSS       MYT14070
      GO TO 480                                                         MYT14080
 280  READ(NUNIT,2200) JNUM,TSPD,TROL,TPIT,TYAW,MSP,MAA,MAAS,MPA,MPAS,  MYT14090
     *MAZ,MAZS,ALT,AIMX,AIMY,AIMZ,TCPA,TACA,TSS                         MYT14100
      GO TO 480                                                         MYT14110
 380  READ(NUNIT,2200) JNUM,TSPD,TROL,TPIT,TYAW,MSP,MAA,MAAS,MPA,MPAS,  MYT14120
     *MAZ,MAZS,ALT,AIMX,AIMY,AIMZ,TCEP,TACA,TSS                         MYT14130
 480  WRITE(6,1015)                                                     MYT14140
      WRITE(6,1020) ITRAJ                                               MYT14150
      WRITE(6,1030)                                                     MYT14160
 580  CONTINUE                                                          MYT14170
      READ(5,*) J                                                       MYT14180
      IF (J.EQ.1) GO TO 60                                              MYT14190
      IF (J.EQ.2) GO TO 65                                              MYT14200
      WRITE (6,1060)                                                    MYT14210
      GO TO 580                                                         MYT14220
 60   WRITE(6,1040)                                                     MYT14230
      READ(5,*) ITRAJ                                                   MYT14240
 65   CONTINUE                                                          MYT14250
      IF (ITRAJ.GT.3) GO TO 60                                          MYT14260
C     ********************************                                  MYT14270
C     *                              *                                  MYT14280
C     *     SELECT USER ACTION       *                                  MYT14290
C     *                              *                                  MYT14300
C     ********************************                                  MYT14310
 1800 CALL FRTCMS('CLRSCRN ')                                           MYT14320
      WRITE(6,4855)                                                     MYT14330
 1820 CONTINUE                                                          MYT14340
      READ(5,*) J                                                       MYT14350
      IF (J.EQ.1) GO TO 1900                                            MYT14360
      IF (J.EQ.2) GO TO 3000                                            MYT14370
      IF (J.EQ.3) GO TO 3100                                            MYT14380
      IF (J.EQ.4) GO TO 3200                                            MYT14390
      WRITE(6,4860)                                                     MYT14400
      GO TO 1820                                                        MYT14410
C     ****************************************                          MYT14420
C     *                                      *                          MYT14430
```

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C    *     MODIFY ALL CASE FILE PARAMETERS        *                    MYT14440
CC   *                                            *                    MYT14450
C    **********************************************                    MYT14460
 1900 WRITE(6,1150)                                                     MYT14470
      RMVAL=TSPD                                                        MYT14480
      CALL CHR(RMVAL)                                                   MYT14490
      TSPD=RMVAL                                                        MYT14500
      WRITE(6,1350)                                                     MYT14510
      RMVAL=TAOA                                                        MYT14520
      CALL CHR(RMVAL)                                                   MYT14530
      TAOA=RMVAL                                                        MYT14540
      WRITE(6,1400)                                                     MYT14550
      RMVAL=TSS                                                         MYT14560
      CALL CHR(RMVAL)                                                   MYT14570
      TSS=RMVAL                                                         MYT14580
      WRITE(6,1450)                                                     MYT14590
      RMVAL=ALT                                                         MYT14600
      CALL CHR(RMVAL)                                                   MYT14610
      ALT=RMVAL                                                         MYT14620
C    **********************************************                    MYT14630
CC   *                                            *                    MYT14640
CCC  *     MODIFY MISSILE PARAMETERS ONLY         *                    MYT14650
CC   *                                            *                    MYT14660
C    **********************************************                    MYT14670
 3000 WRITE(6,1100)                                                     MYT14680
      IMVAL=JNUM                                                        MYT14690
      CALL CHI(IMVAL)                                                   MYT14700
      JNUM=IMVAL                                                        MYT14710
      WRITE(6,1200)                                                     MYT14720
      RMVAL=MSP                                                         MYT14730
      CALL CHR(RMVAL)                                                   MYT14740
      MSP=RMVAL                                                         MYT14750
      WRITE(6,1250)                                                     MYT14760
      RMVAL=MAOA                                                        MYT14770
      CALL CHR(RMVAL)                                                   MYT14780
      MAOA=RMVAL                                                        MYT14790
 3010 IF (ITRAJ.EQ.1) GO TO 3020                                        MYT14800
      IF (ITRAJ.EQ.2) GO TO 3030                                        MYT14810
      IF (ITRAJ.EQ.3) GO TO 3040                                        MYT14820
 3020 WRITE(6,1300)                                                     MYT14830
      RMVAL=MSS                                                         MYT14840
      CALL CHR(RMVAL)                                                   MYT14850
      MSS=RMVAL                                                         MYT14860
      WRITE(6,1500)                                                     MYT14870
      RMVAL=MISX                                                        MYT14880
      CALL CHR(RMVAL)                                                   MYT14890
      MISX=RMVAL                                                        MYT14900
      WRITE(6,1550)                                                     MYT14910
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      RMVAL=MISY                                                        MYT14920
      CALL CHR(RMVAL)                                                   MYT14930
      MISY=RMVAL                                                        MYT14940
      WRITE(6,1600)                                                     MYT14950
      RMVAL=MISZ                                                        MYT14960
      CALL CHR(RMVAL)                                                   MYT14970
      MISZ=RMVAL                                                        MYT14980
      GO TO 1800                                                        MYT14990
 3030 WRITE(6,1650)                                                     MYT15000
      RMVAL=TCPA                                                        MYT15010
      CALL CHR(RMVAL)                                                   MYT15020
      TCPA=RMVAL                                                        MYT15030
      GO TO 1800                                                        MYT15040
 3040 WRITE(6,1700)                                                     MYT15050
      RMVAL=TCEP                                                        MYT15060
      CALL CHR(RMVAL)                                                   MYT15070
      TCEP=RMVAL                                                        MYT15080
      GO TO 1800                                                        MYT15090
C     ***************************************                           MYT15100
C     *                                     *                           MYT15110
C     *     PRINT SUMMARY OF CURRENT VALUES *                           MYT15120
C     *                                     *                           MYT15130
C     ***************************************                           MYT15140
 3100 IF (ITRAJ.EQ.1) GO TO 3110                                        MYT15150
      IF (ITRAJ.EQ.2) GO TO 3120                                        MYT15160
      IF (ITRAJ.EQ.3) GO TO 3130                                        MYT15170
 3110 WRITE(6,4850) ITRAJ                                               MYT15180
      WRITE(6,4810) JNUM,TSPD,MSP,MAOA,MSS,TAOA,TSS,ALT,MISX,MISY,MISZ  MYT15190
      GO TO 3140                                                        MYT15200
 3120 WRITE(6,4850) ITRAJ                                               MYT15210
      WRITE(6,4820) JNUM,TSPD,MSP,MAOA,TAOA,TSS,ALT,TCPA                MYT15220
      GO TO 3140                                                        MYT15230
 3130 WRITE(6,4850) ITRAJ                                               MYT15240
      WRITE(6,4830) JNUM,TSPD,MSP,MAOA,TAOA,TSS,ALT,TCEP                MYT15250
 3140 WRITE(6,4865)                                                     MYT15260
      READ(5,*) J                                                       MYT15270
      GO TO 1800                                                        MYT15280
C     ***************************************                           MYT15290
C     *                                     *                           MYT15300
C     *     RECAP FILE AND STORE ON DISK    *                           MYT15310
C     *                                     *                           MYT15320
C     ***************************************                           MYT15330
 3200 IF (ITRAJ.EQ.1) GO TO 3210                                        MYT15340
      IF (ITRAJ.EQ.2) GO TO 3220                                        MYT15350
      IF (ITRAJ.EQ.3) GO TO 3230                                        MYT15360
 3210 REWIND NUNCT                                                      MYT15370
      WRITE(NUNCT,2005) ITRAJ                                           MYT15380
      WRITE(NUNCT,210) JNUM,TSPD,TROL,TPIT,TYAW,MSP,MAA,MAAS,MPA,MPAS,  MYT15390
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     *MAZ,MAZS,ALT,AIMX,AIMY,AIMZ,MISX,MISY,MISZ,TACA,TSS,MAOA,MSS      MYT15400
      GO TO 5000                                                        MYT15410
 3220 REWIND NUNCT                                                      MYT15420
      WRITE(NUNCT,2005) ITRAJ                                           MYT15430
      WRITE(NUNCT,220) JNUM,TSPD,TRCL,TPIT,TYAW,MSP,MAA,MAAS,MPA,MPAS,  MYT15440
     *MAZ,MAZS,ALT,AIMX,AIMY,AIMZ,TCPA,TAOA,TSS                         MYT15450
      GO TO 5000                                                        MYT15460
 3230 REWIND NUNCT                                                      MYT15470
      WRITE(NUNCT,2005) ITRAJ                                           MYT15480
      WRITE(NUNCT,220) JNUM,TSPD,TRCL,TPIT,TYAW,MSP,MAA,MAAS,MPA,MPAS,  MYT15490
     *MAZ,MAZS,ALT,AIMX,AIMY,AIMZ,TCEP,TAOA,TSS                         MYT15500
C                                                                       MYT15510
C                                                                       MYT15520
 5000 CONTINUE                                                          MYT15530
      WRITE(NUNCT,2005) SENT                                            MYT15540
      ENDFILE NUNCT                                                     MYT15550
      STOP                                                              MYT15560
      END                                                               MYT15570
C    ************************************************************       MYT15580
C    *                                                          *       MYT15590
C    *     SUB HANDLES INTEGER VALUE CHANGES TO CASE FILE       *       MYT15600
C    *                                                          *       MYT15610
C    ************************************************************       MYT15620
      SUBROUTINE CHI(INTVL)                                             MYT15630
C                                                                       MYT15640
      WRITE(6,1020) INTVL                                               MYT15650
      WRITE(6,1030)                                                     MYT15660
 50   CONTINUE                                                          MYT15670
      READ(5,*) J                                                       MYT15680
      IF (J.EQ.1) GO TO 55                                              MYT15690
      IF (J.EQ.2) GO TO 60                                              MYT15700
      WRITE (6,1040)                                                    MYT15710
      GO TO 50                                                          MYT15720
 55   WRITE(6,1040)                                                     MYT15730
      READ(5,*) INTVL                                                   MYT15740
 60   CONTINUE                                                          MYT15750
      CALL FFTCMS('CLRSCRN ')                                           MYT15760
      RETURN                                                            MYT15770
 1020 FORMAT(2X,'CURRENT VALUE IS ',I10)                                MYT15780
 1030 FORMAT(4X,'  **********************'/6X,'* CHANGE VALUE     1   ',MYT15790
     *'*'/6X,'*    NO CHANGE     2   *'/5X,' **********************',   MYT15800
     */2X'SELECT FUNCTION KEY')                                         MYT15810
 1040 FORMAT(2X,'ENTER NEW VALUE')                                      MYT15820
 1060 FORMAT(2X,'I NEED A 1,OR 2')                                      MYT15830
      END                                                               MYT15840
C    ************************************************************       MYT15850
C    *                                                          *       MYT15860
C    *     SUB HANDLES REAL VALUE CHANGES TO CASE FILE          *       MYT15870
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C     *                                                               *   MYT15880
C     *****************************************************************   MYT15890
      SUBROUTINE CHR(RELVL)                                               MYT15900
C                                                                         MYT15910
      REAL RELVL                                                          MYT15920
      WRITE(6,1020) RELVL                                                 MYT15930
      WRITE(6,1030)                                                       MYT15940
   50 CONTINUE                                                            MYT15950
      READ(5,*) J                                                         MYT15960
      IF (J.EQ.1) GO TO 55                                                MYT15970
      IF (J.EQ.2) GO TO 60                                                MYT15980
      WRITE (6,1060)                                                      MYT15990
      GO TO 50                                                            MYT16000
   55 WRITE(6,1040)                                                       MYT16010
      READ(5,*) RELVL                                                     MYT16020
   60 CONTINUE                                                            MYT16030
      CALL FRTCMS('CLRSCRN ')                                             MYT16040
      RETURN                                                              MYT16050
 1020 FORMAT(2X,'CURRENT VALUE IS ',F10.3)                                MYT16060
 1030 FORMAT(4X,'  ***********************'/6X,'* CHANGE VALUE    1   ',MYT16070
     *'*'/6X,'*    NO CHANGE    2    *'/5X,' *************************', MYT16080
     */2X'SELECT FUNCTION KEY')                                           MYT16090
 1040 FORMAT(2X,'ENTER NEW VALUE')                                        MYT16100
 1060 FORMAT(2X,'I NEED A 1,OR 2')                                        MYT16110
C2010 FORMAT(F10.3)                                                       MYT16120
      END                                                                 MYT16130
C                                                                         MYT16140
      BLOCK DATA                                                          MYT16150
      COMMON /TAPSTC/  NUNCT                                              MYT16160
      DATA NUNCT/ 10 /                                                    MYT16170
      END                                                                 MYT16180
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C                                                                       MYT00040
C   THE FOLLOWING CODE REFLECTS THE CHANGES MADE TO SPLGEN AND SPDRAW   MYT00050
C   PROGRAMS TO INCLUDE THREE INTERACTIVE USER LEVELS AND GRAPHICS IN   MYT00060
C   THE PLOT10 AND GRAF77 LANGUGES.  COMMENT ADDITIONS ARE NOT INCLUDED.MYT00070
C                                                                       MYT00080
C                                                                       MYT00090
C     CHANGES MADE TO SPDRAW                                            MYT00100
C     **********************                                            MYT00110
C                                                                       MYT00120
      COMMON /MYFILE/ MFIL                                              MYT00130
      COMMON /MYSCLE/ JSZE                                              MYT00140
      COMMON /EXCUT/ LEVL,TERM,LANG                                     MYT00150
      INTEGER EXT,TYPE,LEVL,TERM,LANG,JSZE                              MYT00160
      REAL NWAPT,NWTLA                                                  MYT00170
      READ(5,*)LEVL,TERM,LANG                                           MYT00180
      CALL FRTCMS('CLRSCRN ')                                           MYT00190
      IF (TERM.EQ.2) GO TO 10                                           MYT00200
      IXCTR=2048                                                        MYT00210
      IYCTR=1536                                                        MYT00220
      IDELX=2047                                                        MYT00230
      IDELY=1535                                                        MYT00240
      GO TO 15                                                          MYT00250
   10 IXCTR=512                                                         MYT00260
      IYCTR=390                                                         MYT00270
      IDELX=511                                                         MYT00280
      IDELY=389                                                         MYT00290
   15 CONTINUE                                                          MYT00300
C                                                                       MYT00310
C       FORMAT STATEMENTS FOR NOVICE USER OPTION KEYS                   MYT00320
C       *********************************************                   MYT00330
C                                                                       MYT00340
 1050 FORMAT(3X,'AT THE NOVICE LEVEL, YOU HAVE THE CAPABILITY OF ',     MYT00350
     *'MANIPULATING THE BASIC TARGET'/3X,'PARAMETERS THROUGH USE ',     MYT00360
     *'OF FUNCTION KEYS TO CONTROL SIMPLE COMMANDS AND OPTIONS.')       MYT00370
 1060 FORMAT(31X,'CURRENT OPTIONS'/25X,                                 MYT00380
     *'"1"=ON "0"=OFF T=TRUE F=FALSE'/8X,                              MYT00390
     *'EXTERNAL COMPS    ',I1,'    INTERNAL COMPS  ',I1,' ERASE BACK ', MYT00400
     *'LINES   ',L1/6X,'SPECIAL OPTIONS OFF  ',L1,'    PLOT IMPACTS   ', MYT00410
     *L1,'     DRAW AXES     ',L1)                                     MYT00420
 1062 FORMAT(3X,'CONTROL OF GRAPHICS ON THE SCREEN DEPENDS ON USER SET',MYT00430
     *' OPTIONS. DEFAULT OPTIONS   '/3X,'AT THE BEGINNING OF THE PROG', MYT00440
     *'RAM ARE SUFFIXED BY AN "*".  SPECIAL OPTIONS ARE'/3X,'PREFIXED', MYT00450
     *' BY AN "S".'/3X,'SELECT CORRESPONDING FUNCTION KEY')             MYT00460
 1064 FORMAT(9X,'*************************************'/9X,            MYT00470
     *'*   OPTIONS          FUNCTION KEYS *'/9X,                       MYT00480
     *'*                                   *'/9X,                       MYT00490
     *'* EXTERNAL COMPS *        1        *'/9X,                       MYT00500
     *'* INTERNAL COMPS          2        *'/9X,                       MYT00510
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     *'* DRAW ALL LINES *          3        *')                                  MYT00520
 1066 FORMAT(9X,'* REMOVE HIDDEN LINES     4        *'/9X,                      MYT00530
     *'* NO MORE CHANGES           5        *'/9X,                              MYT00540
     *'* S PLOT IMPACTS            6        *'/9X,                              MYT00550
     *'* S DRAW AXES               7        *'/9X,                              MYT00560
     *'* CANCEL S OPTIONS *        8        *'/9X,                              MYT00570
     *'*************************************')                                  MYT00580
                                                                                MYT00590
C       FORMAT STATEMENTS FOR INTERMEDIARY USER OPTION KEYS                     MYT00600
C      ****************************************************                     MYT00610
C                                                                               MYT00620
 1070 FORMAT(3X,'AT THE INTERMEDIARY LEVEL THE USER HAS AN INCREASED',          MYT00630
     *' NUMBER OF'/3X,'AVAILABLE OPTIONS AND COMMANDS.  CONTROL OF ',           MYT00640
     *'THESE PARAMETERS IS'/3X,'THROUGH FUNCTION KEYS AND NUMERICAL ',          MYT00650
     *'INPUT.')                                                                 MYT00660
 1080 FORMAT(31X,'CURRENT OPTIONS'/22X,                                         MYT00670
     *'"1"OR"2"=ON "0"=OFF T=TRUE F=FALSE'/4X                                   MYT00680
     *'EXTERNAL COMPS     ',I1,'   INTERNAL COMPS  ',I1,' ERASE BACK ',         MYT00690
     *'LINES  ',L1/4X,'SPECIAL OPTIONS OFF  ',L1,'    PLOT IMPACTS   ',         MYT00700
     *L1,'     DRAW AXES     ',L1/4X,'CARTESIAN COORDS     ',L1,' PER',         MYT00710
     *'SPECTIVE PROJ ',L1,'  EXPLICIT CENTRE  ',L1/4X,'DRAW WITH DOTS',         MYT00720
     *'     ',L1)                                                              MYT00730
 1082 FORMAT(2X,'"S" DENOTES SPECIAL --- "*" DENOTES DEFAULT SETTING'/)         MYT00740
 1084 FORMAT(4X,'*******************************************',                  MYT00750
     *'**********'/4X,                                                         MYT00760
     *'*   OPTIONS        FUNC KEY     OPTIONS,       FUNC KEY  *'/4X,        MYT00770
     *'*                                                        *'/4X,        MYT00780
     *'* EXTERNAL COMPS *    1    * CARTESIAN COORDS *    9     *'/4X,        MYT00790
     *'* INTERNAL COMPS      2    * SPHERICAL COORDS      10    *'/4X,        MYT00800
     *'* DRAW ALL LINES *    3    * ---- SPECIAL  OPTIONS ---- *')             MYT00810
 1086 FORMAT(4X,'* ERASE HIDDEN LINES  4    * S DRAW WITH DOTS      ',         MYT00820
     *'11     *'/4X,                                                           MYT00830
     *'* OPTICAL CENTRE *     5    * S PLOT IMPACTS        12     *'/4X,      MYT00840
     *'* EXPLICIT CENTRE      6    * S  DRAW AXES          13     *'/4X,      MYT00850
     *'* PARALLEL PROJ *      7    * CANCELL SPECIAL OPTS  14     *'/4X,      MYT00860
     *'* PERSPECTIVE PROJ     8    *  NO MORE CHANGES      15     *'/4X,      MYT00870
     *'*************************************************************')       MYT00880
C                                                                               MYT00890
C     FORMAT STATEMENTS FOR INTERMEDIARY USER COMMANDS                          MYT00900
C    ***************************************************                        MYT00910
C                                                                               MYT00920
 1092 FORMAT(3X,'ENTER YOUR NEW VALUE (REAL NUMBER).')                          MYT00930
 1093 FORMAT(3X,'YOU HAVE THE OPTION OF CHANGING TICK SPACE VALUE')             MYT00940
 1094 FORMAT(F7.1)                                                              MYT00950
 1095 FORMAT(F10.4)                                                             MYT00960
 1096 FORMAT(//6X,'*******************************'/6X,                         MYT00970
     *'*   ACTION       FUNCTION KEY *'/6X,                                     MYT00980
     *'*   ------       ------------ *'/6X,                                     MYT00990
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     *'*  NC CHANGE          1       *'/6X,                                  MYT01000
     *'* CHANGE VALUE        2       *'/6X,                                  MYT01010
     *'*****************************')                                       MYT01020
 1097 FORMAT(2X,'I NEED A 1, OR 2')                                          MYT01030
C                                                                            MYT01040
C       FORMAT STATEMENTS FOR EXPERIENCED USER OPTIONS                       MYT01050
C      ************************************************                      MYT01060
C                                                                            MYT01070
 2030 FORMAT(31X,'CURRENT OPTIONS'/22X,                                      MYT01080
     *'"1"OR"2"=ON "0"=OFF T=TRUE F=FALSE'/4X,                               MYT01090
     *' EXTERNAL COMPS  ',I2,' INTERNAL COMPS ',I2,'    TYPE    ',I1/4X,     MYT01100
     *'ERASE BACK LINES ',L2,' EXPLICIT CENTER',L2,' CARTESIAN  ',L2/4X,     MYTC1110
     *'PERSPECTIVE VIEW ',L2,' PLOT IMPACTS   ',L2,' DRAW AXES  ',L2/4X,     MYTC1120
     *' EXPLODED VIEW   ',L2,' XSECTIONAL VIEW',L2,' SAVE SCREEN',L2/4X,     MYTC1130
     *'DRAW SAVED SCREEN',L2,' NO SCREEN ERASE',L2,' SUBSYSTENS ',L2/4X,     MYT01140
     *'DRAW SUBSYSTEMS W/DOTS ',L1)                                          MYT01150
 2050 FORMAT(4X,'       OPTION                    OPTION DESCRIPTORS'/4X,   MYT01160
     *'       ------                    ------------------'/4X,             MYT01170
     *'VECTORS DRAWN   ---  DR(AWALL)/HI(DDEN LINES REMOVE)'/4X,            MYT01180
     *'TYPE PROJECTION ---  NOP(ERSPECTIVE)/P(ERSPECTIVE)'/4X,              MYT01190
     *'TYPE OF COORDS  ---  SP(HERICAL)/CA(RTESIAN)'/4X,                    MYTC1200
     *'TYPE OF CENTER  ---  CTRO(PTICAL)/CTRE(XPLICIT)'/4X,                 MYT01210
     *'COMPONENTS  ---  EXTL(EXTERNAL-LINES)/INTL(INTERNAL-LINES)'/4X,      MYT01220
     *'                 EXTD(EXTERNAL-DOTS)/INTD(INTERNAL-DOTS)'/4X,        MYT01230
     *'                  NOEX(NO EXTERNAL)/NOIN(NO INTERNAL)')              MYT01240
 2055 FORMAT(4X,'CANCELL SPECIAL OPTIONS  ---  NOS(PECIAL OPTIONS)'/4X,      MYTC1250
     *'SPECIAL OPTIONS ---  EX(PLODE VIEW)/X(SECTIONAL VIEW)'/4X,           MYT01260
     *'                     IM(PACTS PLOT)/AX(ES DRAW)'/4X,                 MYT01270
     *'                MSKI(SAVE SCREEN)/MSKD(RAW SAVED SCREEN)'/4X,        MYT01280
     *'                SU(BSYSTEMS DRAW)/DO(TS FOR SUBSYSTEMS)'/4X,         MYT01290
     *'                      NOEJ(ECTION OF SCREEN)')                      MYTC1300
C                                                                            MYT01310
C    FORMAT STATEMENTS FOR EXPERIENCED USER COMMANDS                         MYT01320
C   ************************************************                         MYT01330
C                                                                            MYT01340
 1090 FORMAT(3X,'AT THE EXPERIENCED LEVEL THE USER HAS THE FULL SET OF',     MYT01350
     *' COMMANDS'/3X,'AND OPTIONS AT HIS DISPOSAL.  CONTROL OF PARAMET',     MYTC1360
     *'ERS IS THROUGH'/3X,'COMMAND AND NUMERICAL ENTRY.')                    MYT01370
 2000 FORMAT('1',60HA COMMAND HAS AN IDENTIFIER FOLLOWED BY OPTIONAL PARM    MYT01380
     *AMETERS./79H EACH PARAMETER IS SEPARATED FROM THE OTHER BY EITHER      MYT01390
     *A SPACE, COMMA, OR EQUAL /77H SIGN (OR ANY NUMBER OF THEM).  NUMER     MYT01400
     *IC DATA CAN BE ALSO SEPARATED BY PLUS OR/79H MINUS SIGNS.  ALL NUM     MYTC1410
     *ERIC INPUT IS POSITIONALLY ASSOCIATED WITH ITS PARAMETER./             MYT01420
     *          67H TYPING A PERCENT SIGN (%) IN ANY RESPONSE TO 'COMMAN     MYT01430
     *D?' WILL CAUSE/28H REJECTION OF ENTIRE STRING.)                        MYT01440
 2002 FORMAT(77HOLIST OF COMMANDS (OPTIONAL CHARACTERS IN PARENS, COMMAN     MYT01450
     *DS MARKED DISPLAY CAN/5X,55HSHOW CURRENT VALUES BY ENTERING JUST T     MYT01460
     *HE COMMAND NAME):)                                                    MYT01470
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 2003 FORMAT(5X,39HEN(C) - TERMINATES EXECUTION OF PROGRAM)                MYT01480
 2004 FORMAT(5X,39HO(PTION) - DISPLAY/SET PLOTTING OPTIONS)               MYT01490
 2005 FORMAT(5X,56HP(ICTURE) - DRAWS PICTURE OF MODEL USING CURRENT OPTIMYT01500
     *CNS)                                                                MYT01510
 2006 FORMAT(5X,36HSC(ENE) - DRAWS SEQUENCE OF PICTURES)                  MYT01520
 2007 FORMAT(5X,25HST(EP) - SIMILAR TO SCENE)                             MYT01530
 2008 FORMAT(5X,8HSY(STEM)/5X,68H   OR      - DISPLAY/DEFINE (ADD TO) CMYT01540
     *URRENT USER DEFINED SUBSYSTEM/5X,11HSU(BSYSTEM))                    MYT01550
 2009 FORMAT(5X,47HAX(ES) - DISPLAY/DEFINE AXIS DRAWING PARAMETERS)       MYT01560
 2010 FORMAT(5X,46HD(EBUG) - DISPLAY/SET DEBUGGING PRINT SWITCHES)        MYT01570
 2012 FORMAT(5X,43HAP(ERATURE) - DISPLAY/SET VIEWING APERATURE)           MYT01580
 2013 FORMAT(5X,58HFR(AMESPEED) - DISPLAY/SET FRAMESPEED IN FRAMES PER SMYT01590
     *ECOND)                                                              MYT01600
 2014 FORMAT(5X,71HHL(ENGTH) - DISPLAY/SET HIDDEN LINE SEGMENT LENGTH (IMYT01610
     *N PLOTTER RASTERS))                                                 MYT01620
 2015 FORMAT(5X,71HHTL - DISPLAY/SET HIDDEN LINE REMOVAL LINEAR TOLERANCMYT01630
     *E (IN MODEL UNITS))                                                 MYT01640
 2016 FORMAT(5X,65HHTA - DISPLAY/SET HIDDEN LINE REMOVAL ANGULAR TOLERANMYT01650
     *CE (DEGREES))                                                       MYT01660
 2017 FORMAT(5X,61HEJ(ECT) - ADVANCES FRAME (ONLY WHEN IN MULTIPLE PICTUMYT01670
     *RE MODE))                                                           MYT01680
 2018 FORMAT(5X,70HHE(LP) - PRODUCES THIS LIST.  FURTHER INFORMATION ON MYT01690
     *SPECIFIC COMMANDS/5X,76HIS REQUESTED BY TYPING THE IDENTIFIER OF TMYT01700
     *HE COMMAND AFTER THE WORD 'HELP,'.)                                  MYT01710
 2020 FORMAT(1X,'COMMAND ?'/1X,'*********')                               MYT01720
 2025 FORMAT(3X,'OPTIONS ARE SET BY TYPING "O" FOLLOWED BY OPTION DES',   MYT01730
     *'CRIPTOR.')                                                         MYT01740
 2040 FORMAT(6X,'************************************'/6X,               MYT01750
     *'* ACCESS COMMAND DESCRIPTORS   1  *'/6X,                          MYT01760
     *'* ACCESS OPTION DESCRIPTORS    2  *'/6X,                          MYT01770
     *'************************************')                           MYT01780
 2045 FORMAT(3X,'I NEED A 1,OR 2')                                       MYT01790
C                                                                        MYT01800
      MDTS=.FALSE.                                                       MYT01810
      SPOP=.TRUE.                                                        MYT01820
      JSZE=1                                                             MYT01830
C                                                                        MYT01840
C     DETERMINE USER LEVEL                                               MYT01850
C     ********************                                               MYT01860
C                                                                        MYT01870
      IF (LEVL.EQ.1)GO TO 61                                             MYT01880
      IF (LEVL.EQ.2)GO TO 63                                             MYT01890
      WRITE(6,1090)                                                      MYT01900
      WRITE(6,2000)                                                      MYT01910
      WRITE(6,2002)                                                      MYT01920
      WRITE(6,2025)                                                      MYT01930
      WRITE(6,2040)                                                      MYT01940
   55 CONTINUE                                                           MYT01950
```

```
      READ(5,*) J                                                          MYT01960
      IF (J.EQ.1) GO TO 68                                                 MYT01970
      IF (J.EQ.2) GO TO 750                                                MYT01980
      WRITE(6,2045)                                                        MYT01990
      GO TO 55                                                             MYT02000
C                                                                          MYT02010
CCC    SELECT FUNCTION KEY FROM MENU AND ACTION                            MYT02020
CCC    ELSE SEND DIAGNOSTIC                                                MYT02030
CCC    ****************************************                            MYT02040
C                                                                          MYT02050
   6C IF (LEVL.EQ.1) GO TO 62                                              MYT02060
      IF (LEVL.EQ.2)GO TO 65                                               MYT02070
      GO TO 68                                                             MYT02080
   61 WRITE(6,1050)                                                        MYT02090
C  62 CALL FRTCMS('CLRSCRN ')                                              MYT02100
   62 CALL FKNV(L)                                                         MYT02110
      GO TO (82,72,320,230),L                                              MYT02120
   63 WRITE(6,107C)                                                        MYT02130
   65 CALL FKINT(L)                                                        MYT02140
      GO TO (82,74,320,292,242,252,262,230),L                              MYT02150
   68 CALL FRTCMS('CLRSCRN ')                                              MYT02160
      WRITE(6,2003)                                                        MYT02170
      WRITE(6,2005)                                                        MYT02180
      WRITE(6,2004)                                                        MYT02190
      WRITE(6,2006)                                                        MYT02200
      WRITE(6,2007)                                                        MYT02210
      WRITE(6,2008)                                                        MYT02220
      WRITE(6,2009)                                                        MYT02230
      WRITE(6,2010)                                                        MYT02240
      WRITE(6,2012)                                                        MYT02250
      WRITE(6,2013)                                                        MYT02260
      WRITE(6,2014)                                                        MYT02270
      WRITE(6,2015)                                                        MYT02280
      WRITE(6,2016)                                                        MYT02290
      WRITE(6,2017)                                                        MYT02300
      WRITE(6,2018)                                                        MYT02310
      WRITE(6,202C)                                                        MYT02320
C  ***************************************                                 MYT02330
CC *                                     *                                MYT02340
CC *      SELECT OPTION SEQUENCE         *                                MYT02350
CC *                                     *                                MYT02360
C  ***************************************                                 MYT02370
   7C    CALL SETFLG(CARD,I)                                               MYT02380
  700    CALL FRTCMS('CLRSCRN ')                                           MYT02390
         WRITE(6,2030)  EXT,INT,TYPE,HID,CEN,CART,PERSP,IMPX,AXES,         MYT02400
     *EXPLO,XSEC,MSKI,MSKD,NOEJ,SUBS,DOTS                                  MYT02410
         WRITE(6,2040)                                                     MYT02420
      ICURP = 0                                                            MYT02430
```

```
  725     CONTINUE                                                          MYT02440
          READ(5,*) J                                                       MYT02450
      IF (J.EQ.1) GO TO 68                                                  MYT02460
      IF (J.EQ.2) GO TC 750                                                 MYTC2470
      WRITE(6,2045)                                                         MYT02480
      GO TO 725                                                             MYT02490
  750     CALL FRTCMS('CLRSCRN ')                                           MYT02500
          WRITE(6,2050)                                                     MYT02510
          WRITE(6,2055)                                                     MYT02520
          WRITE(6,2025)                                                     MYT02530
          WRITE(6,2020)                                                     MYT02540
          GO TO 69                                                          MYT02550
C         GO TO 60                                                          MYT02560
   72     CALL FRTCMS('CLRSCRN ')                                           MYT02570
          WRITE(6,1060)   EXT,INT,HID,SPOP,IMPX,AXES                        MYTC2580
          WRITE(6,1C62)                                                     MYT02590
          WRITE(6,1064)                                                     MYT02600
          WRITE(6,1C66)                                                     MYT02610
          READ(5,*) JJ                                                      MYT02620
          GO TO(500,510,520,530,570,540,550,560),JJ                         MYT02630
  500     EXT=1                                                             MYT02640
          INT=0                                                             MYT02650
          GO TO 72                                                          MYT02660
  51C     INT=1                                                             MYT02670
          EXT=0                                                             MYT02680
          GO TO 72                                                          MYT02690
  520     HID=.FALSE.                                                       MYT02700
          GO TO 72                                                          MYT02710
  530     HID=.TRUE.                                                        MYT02720
          GO TO 72                                                          MYT02730
  540     IMPX=.TRUE.                                                       MYT02740
          SPOP=.FALSE.                                                      MYT02750
          GO TO 72                                                          MYT02760
  55C     AXES=.TRUE.                                                       MYT02770
          SPOP=.FALSE.                                                      MYT02780
          GO TO 72                                                          MYT02790
  560     IMPX=.FALSE.                                                      MYT02800
          SPOP=.TRUE.                                                       MYT02810
          AXES=.FALSE.                                                      MYTC2820
          GO TO 72                                                          MYTC2830
  570 ICURP = 0                                                             MYTC2840
          CALL FRTCMS('CLRSCRN ')                                           MYTC2850
          GO TO 60                                                          MYT02660
   74     CALL FRTCMS('CLRSCRN ')                                           MYT02870
          WRITE(6,1C80)   EXT,INT,HID,SPOP,IMPX,AXES,CART,PERSP,CEN,MDTS    MYTC2880
          WRITE(6,1082)                                                     MYT02890
          WRITE(6,1C84)                                                     MYTC2900
          WRITE(6,1C86)                                                     MYTC2910
```

```
      READ(5,*) JJ                                                      MYTC2920
      GO TO(60C,605,610,615,620,625,630,635,64C,645,650,655,660,        MYT02930
     *665,67C),JJ                                                       MYTC2940
60C   EXT=1                                                             MYT02950
      INT=0                                                             MYTC2960
      GO TO 74                                                          MYTC2970
605   INT=1                                                             MYTC2980
      EXT=0                                                             MYT02990
      GO TO 74                                                          MYT03000
61C   HIC=.FALSE.                                                       MYTC3010
      GO TO 74                                                          MYT03020
615   HIC=.TRUE.                                                        MYT03030
      GO TO 74                                                          MYT03040
620   CEN=.FALSE.                                                       MYT03050
      GO TO 74                                                          MYT03060
625   CEN=.TRUE.                                                        MYT03070
      GO TO 74                                                          MYT03080
630   PERSP=.FALSE.                                                     MYT03090
      GO TO 74                                                          MYT03100
635   PERSP=.TRUE.                                                      MYT03110
      GO TO 74                                                          MYTC3120
640   CART=.TRUE.                                                       MYT03130
      GO TO 74                                                          MYT03140
645   CART=.FALSE.                                                      MYT03150
      GO TO 74                                                          MYT03160
650   MDTS=.TRUE.                                                       MYT03170
      IF (INT.EQ.0) EXT=2                                               MYT03180
      IF (EXT.EC.0) INT=2                                               MYTC3190
      GO TO 74                                                          MYT03200
655   IMPX=.TRUE.                                                       MYT03210
      SPCP=.FALSE.                                                      MYT03220
      GO TO 74                                                          MYT03230
66C   AXES=.TRUE.                                                       MYT03240
      SPCP=.FALSE.                                                      MYT03250
      GO TO 74                                                          MYT03260
665   IMPX=.FALSE.                                                      MYT03270
      SPCP=.TRUE.                                                       MYTC3280
      AXES=.FALSE.                                                      MYT03290
      MDTS=.FALSE.                                                      MYTC3300
      IF (EXT.EQ.2) EXT=1                                               MYT03310
      IF (INT.EQ.2) INT=1                                               MYT03320
      GO TO 74                                                          MYT03330
67C ICURP = 0                                                           MYT03340
      CALL FRTCMS('CLRSCRN ')                                           MYT03350
      GO TO 60                                                          MYT03360
      TPR=.FALSE.                                                       MYTC3370
C     WRITE(6,*) TPR                                                    MYTC3380
      CALL INCR(Y,Z,SPIN,TPR)                                           MYTC3390
```

```
          IF (TPR) GO TC 85                                              MYT03400
C                                                                        MYT03410
      SUBROUTINE FKNV(J)                                                 MYT03420
C     ******************                                                 MYT03430
C                                                                        MYTC3440
      WRITE(6,100)                                                       MYT03450
      WRITE(6,110)                                                       MYTC3460
 20   CONTINUE                                                           MYT03470
      READ(5,*) J                                                        MYT03480
      IF (J.LT.1.OR.J.GT.4) GO TO 25                                     MYT03490
      RETURN                                                             MYT03500
 25   WRITE(6,150)                                                       MYT03510
      GO TO 20                                                           MYT03520
 100  FORMAT(9X,'*********************************'/9X,                  MYT03530
     *'*  COMMAND        FUNCTION KEYS  *'/9X,                          MYTC3540
     *'*                 ------I------  *'/9X,                          MYT03550
     *'* DRAW TARGET          I         *'/9X,                          MYT03560
     *'* SET OPTIONS          2         *'/9X,                          MYTC3570
     *'* EXIT PROGRAM         3         *'/9X,                          MYT03580
     *'* LIST AXES            4         *'/9X,                          MYT03590
     *'*********************************')                             MYT03600
 110  FORMAT(3X,'SELECT CORRESPONDING FUNCTION KEY')                     MYT03610
 150  FORMAT(3X,'I NEED A 1,2,3,OR 4')                                   MYT03620
      END                                                                MYT03630
C                                                                        MYT03640
      SUBROUTINE FKINT(J)                                                MYTC3650
C     ******************                                                 MYT03660
C                                                                        MYT03670
      WRITE(6,100)                                                       MYTC3680
      WRITE(6,110)                                                       MYT03690
 20   CONTINUE                                                           MYTC3700
      READ(5,*) J                                                        MYT03710
      IF (J.LT.1.OR.J.GT.8) GO TO 25                                     MYT03720
      RETURN                                                             MYT03730
 25   WRITE(6,150)                                                       MYT03740
      GO TO 20                                                           MYT03750
 100  FORMAT(9X,'*********************************'/9X,                  MYT03760
     *'*  COMMAND        FUNCTION KEYS  *'/9X,                          MYT03770
     *'*                 ------I------  *'/9X,                          MYTC3780
     *'* DRAW TARGET          I         *'/9X,                          MYT03790
     *'* SET OPTIONS          2         *'/9X,                          MYT03800
     *'* EXIT PROGRAM         3         *')                             MYT03810
 110  FORMAT(9X,'* SET APERTURE          4          *'/9X,               MYT03820
     *'* HIDDEN LINE LENGTH   5         *'/9X,                          MYT03830
     *'* SET LINE TOLERANCE   6         *'/9X,                          MYTC3840
     *'* SET ANGLE TOLERANCE  7         *'/9X,                          MYT03850
     *'* LIST AXES            8         *'/9X,                          MYT03860
     *'*********************************'/3X,                          MYTC3870
```

```
     *'SELECT CORRESPONDING FUNCTION KEY.')                                  MYT03880
 150  FORMAT(3X,'I NEED A 1,2,3,4,5,6, OR 7')                               MYT03890
      END                                                                   MYTC3900
C                                                                           MYT03910
C                                                                           MYTC3920
      SUBROUTINE INCR(S,T,RCT,TPR)                                          MYT03930
C     ****************************                                          MYTC3940
C                                                                           MYTC3950
      COMMON /MYSCLE/ JSZE                                                  MYTC3960
      LOGICAL TPR                                                           MYTC3970
      REAL DELTA                                                            MYTC3980
      DELTA=10.0                                                            MYTC3990
C     JSZE=1                                                                MYTC4000
 8    WRITE(6,100) DELTA                                                    MYTC4010
      WRITE(6,110)                                                          MYT04020
 100  FORMAT(2X,' SELECT A FUNCTION KEY TO DYNAMICALLY CHANGE YOUR',        MYT04030
     *'DISPLAY'/2X,'OR RETURN TO COMMAND MODE.  CURRENT DEGREE SETTING',    MYT04040
     *' IS ',F3.1,/2X,'DEFAULT SCALING IS FULL SCREEN(1/2,1/4,1/8 ARE ',    MYTC4050
     *'AVAILABLE).')                                                        MYT04060
 110  FORMAT(//5X,'*** INCREMENT--(FK)****DECREMENT--(FK)'/5X,              MYT04070
     *'AZIMUTH        1        AZIMUTH      2     '/5X,                    MYT04080
     *'ELEVATION      3        ELEVATION    4     '/5X,                    MYT04090
     *'ROTATION       5        ROTATION     6     '/5X,                    MYTC4100
     *'SCALING        7        SCALING      8     '/5X,                    MYTC4110
     *'NEW COMMAND    9      SET INCREMENT  10    '/5X,                    MYT04120
     *'*************************************')                            MYT04130
 120  FORMAT(5X,'ENTER A REAL VALUE BETWEEN 0.0 AND 90.0 DEGREES TO'/5X,    MYT04140
     *' CHANGE THE CURRENT INCREMENT/DECREMENT VALUE.'/5X,                  MYT04150
     *'*************************************************')                MYT04160
C130  FORMAT(F3.1)                                                          MYT04170
      READ(5,*) JJ                                                          MYT04180
      IF (JJ.EQ.1) GO TO 10                                                 MYTC4190
      IF (JJ.EQ.2) GO TO 20                                                 MYT04200
      IF (JJ.EQ.3) GO TO 30                                                 MYT04210
      IF (JJ.EQ.4) GO TO 40                                                 MYT04220
      IF (JJ.EQ.5) GO TO 50                                                 MYT04230
      IF (JJ.EQ.6) GO TO 60                                                 MYTC4240
      IF (JJ.EQ.7) GO TO 70                                                 MYT04250
      IF (JJ.EQ.8) GO TO 80                                                 MYT04260
      IF (JJ.EQ.9) GO TO 90                                                 MYTC4270
      IF (JJ.EQ.10) GO TO 85                                                MYTC4280
      GO TO 8                                                               MYT04290
 10   S=S+DELTA                                                             MYT04300
      IF (S.GT.360.0) S=S-360.0                                             MYT04310
      TPR=.TRUE.                                                            MYT04320
      GO TO 90                                                              MYT04330
 20   S=S-DELTA                                                             MYT04340
      IF (S.LT.0.0) S=S+360.0                                               MYTC4350
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      TPR=.TPUE.                                                        MYTC4360
      GO TO 90                                                          MYT04370
30    T=T+DELTA                                                         MYT04380
      IF (T.GT.360.0) T=T-360.0                                         MYT04390
      TPR=.TRUE.                                                        MYTC4400
      GO TO 90                                                          MYT04410
40    T=T-DELTA                                                         MYTC4420
      IF (T.LT.0.0) T=T+360.0                                           MYT04430
      TPR=.TRUE.                                                        MYT04440
      GO TO 90                                                          MYTC4450
50    ROT=ROT+DELTA                                                     MYT04460
      IF (ROT.GT.360.0) ROT=ROT-360.0                                   MYT04470
      TPR=.TRUE.                                                        MYTC4480
      GO TO 90                                                          MYT04490
60    ROT=ROT-DELTA                                                     MYT04500
      IF (ROT.LT.0.0) ROT=ROT+360.0                                     MYT04510
      TPR=.TRUE.                                                        MYT04520
      GO TO 90                                                          MYTC4530
70    JSZE=JSZE-1                                                       MYT04540
      IF (JSZE.LT.1) JSZE=4                                             MYT04550
      TPR=.TRUE.                                                        MYT04560
      GO TO 90                                                          MYT04570
80    JSZE=JSZE+1                                                       MYT04580
      IF (JSZE.GT.4) JSZE=1                                             MYTC4590
      TPR=.TRUE.                                                        MYT04600
      GO TO 90                                                          MYT04610
85    CALL FRTCMS('CLRSCRN ')                                           MYT04620
      WRITE(6,120)                                                      MYT04630
      READ(5,*) DELTA                                                   MYTC4640
      GO TO 8                                                           MYT04650
90    RETURN                                                            MYT04660
      END                                                               MYT04670
C                                                                       MYT04680
C        USER PROVIDED ROUTINE - INITIALIZES GRAPHIC SYSTEM             MYT04690
      SUBROUTINE GRINIT                                                 MYT04700
C     ******************                                                MYT04710
C                                                                       MYT04720
      COMMON /EXCUT/ LEVL,TERM,LANG                                     MYTC4730
      INTEGER LEVL,TERM,LANG                                            MYT04740
      IF (TERM.EQ.1) GO TO 10                                           MYT04750
      IF (TERM.EQ.2) GO TO 20                                           MYT04760
 10   CALL DSINIT                                                       MYTC4770
      CALL GSERSE                                                       MYT04780
      GO TO 50                                                          MYTC4790
 20   CALL INITT(1200)                                                  MYT04800
      CALL NEWPAG                                                       MYT04810
      GO TO 50                                                          MYTC4820
 50   CONTINUE                                                          MYTC4830
```

```
      RETURN                                                            MYT04840
      END                                                               MYT04850
C                                                                       MYT04860
C        USER PROVIDED RCUTINE - EJECT PAGE                             MYT04870
      SUBROUTINE FRAME                                                  MYT04880
C     ***************                                                   MYT04890
C                                                                       MYT04900
      COMMON /EXCUT/ LEVL,TERM,LANG                                     MYT04910
      INTEGER LEVL,TERM,LANG                                            MYT04920
      IF (TERM.EQ.1) GO TO 10                                           MYT04930
      IF (TERM.EQ.2) GO TO 20                                           MYT04940
      GO TO 50                                                          MYT04950
   10 CALL GSERSE                                                       MYT04960
      GO TO 50                                                          MYT04970
   20 CALL NEWPAG                                                       MYT04980
   50 CONTINUE                                                          MYT04990
      RETURN                                                            MYT05000
      END                                                               MYT05010
C                                                                       MYT05020
C        USER PROVIDED ROUTINE - TERMINATES GRAPHIC OUTPUT              MYT05030
      SUBROUTINE GREND                                                  MYT05040
C     ***************                                                   MYT05050
C                                                                       MYT05060
      COMMON /EXCUT/ LEVL,TERM,LANG                                     MYT05070
      INTEGER LEVL,TERM,LANG                                            MYT05080
      IF (TERM.EQ.1) GO TO 10                                           MYT05090
      IF (TERM.EQ.2) GO TO 20                                           MYT05100
   10 CALL GSFRCE                                                       MYT05110
      CALL CSTERM                                                       MYT05120
      GO TO 50                                                          MYT05130
C  20 CALL TSEND                                                        MYT05140
   20 CALL FINITT(1,1)                                                  MYT05150
   50 CONTINUE                                                          MYT05160
      RETURN                                                            MYT05170
      END                                                               MYT05180
C                                                                       MYT05190
C                                                                       MYT05200
      SUBROUTINE SHOWIT                                                 MYT05210
C     ***************                                                   MYT05220
C                                                                       MYT05230
      COMMON /MYFILE/ MFIL                                              MYT05240
      COMMON /MYSCLE/ JSZE                                              MYT05250
      COMMON /EXCUT/ LEVL,TERM,LANG                                     MYT05260
      INTEGER NN,X1,X2,Y1,Y2,TERM,LEVL,LANG,A,B                         MYT05270
      REAL Q                                                            MYT05280
      REWIND MFIL                                                       MYT05290
      IF (TERM.EQ.1) GO TO 150                                          MYT05300
      IF (TERM.EQ.2) GO TO 250                                          MYT05310
```

```
  150  READ(MFIL) C,NN,X1,Y1,X2,Y2                                    MYTC5320
       IF (Q.LT.-1C0.0) GO TO 195                                      MYTO5330
       IF (Q.GT.0.0) GO TO 160                                         MYTO5340
       IM=X2                                                           MYTO5350
       IF (Q.LE.0.0) GO TO 170                                         MYTO5360
  160  X1=X1/JSZE                                                      MYTC5370
       Y1=Y1/JSZE                                                      MYTO5380
       X2=X2/JSZE                                                      MYTO5390
       Y2=Y2/JSZE                                                      MYTC5400
       CALL GSVECT(0,X1,Y1)                                            MYTO5410
       CALL GSVECT(1,X2,Y2)                                            MYTO5420
       GO TO 150                                                       MYTO5430
  170  A=X1/JSZE                                                       MYTO5440
       B=Y1/JSZE                                                       MYTO5450
C      IM=X2                                                           MYTO5460
       CALL GSVECT(0,A-IM,B-IM)                                        MYTO5470
       CALL GSVECT(1,A-IM,B+IM)                                        MYTC5480
       CALL GSVECT(1,A+IM,B+IM)                                        MYTO5490
       CALL GSVECT(1,A+IM,B-IM)                                        MYTO5500
       CALL GSVECT(1,A-IM,B-IM)                                        MYTO5510
       GO TO 150                                                       MYTO5520
  195  CALL GSFRCE                                                     MYTO5530
       RETURN                                                          MYTO5540
  250  READ(MFIL) C,NN,X1,Y1,X2,Y2                                    MYTC5550
       IF (Q.LT.-100.0) GO TO 295                                      MYTO5560
       IF (Q.GT.0.0) GO TO 260                                         MYTO5570
       IM=2                                                            MYTO5580
       IF (Q.LE.0.0) GO TO 270                                         MYTO5590
  260  X1=X1/JSZE                                                      MYTO5600
       Y1=Y1/JSZE                                                      MYTO5610
       X2=X2/JSZE                                                      MYTC5620
       Y2=Y2/JSZE                                                      MYTO5630
       CALL MOVABS(X1,Y1)                                              MYTC5640
       CALL DRWABS(X2,Y2)                                              MYTO5650
       GO TO 250                                                       MYTO5660
  270  A=X1/JSZE                                                       MYTO5670
       B=Y1/JSZE                                                       MYTO5680
C      IM=IM/2                                                         MYTO5690
       CALL MOVABS(A-IM,B-IM)                                          MYTO5700
       CALL DRWABS(A-IM,B+IM)                                          MYTO5710
       CALL DRWABS(A+IM,B+IM)                                          MYTO5720
       CALL DRWABS(A+IM,B-IM)                                          MYTC5730
       CALL DRWABS(A-IM,B-IM)                                          MYTO5740
       GO TO 250                                                       MYTO5750
C295   CALL TSEND                                                      MYTO5760
  295  RETURN                                                          MYTO5770
       END                                                             MYTO5780
C                                                                      MYTO5790
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C     SEQUENCE ADDED TO ALL DRAWING CONTROL SUBROUTINES TO ACCOMODATE    MYT05800
C     COMMON LINE STORAGE FILE,INCLUSION OF SENTINNEL, AND NOEJ OPTION   MYT05810
C     ADDED TO SUBROUTINE GENHD,DRWALL,DRWHDN,EXPLODE, AND XSECTN        MYT05820
C     ***************************************************************   MYT05830
C                                                                       MYT05840
      COMMON /MYFILE/ MFIL                                              MYT05850
      COMMON /FSPCL/ XSEC,SUBS,EXPLO,AXES,LABL,IMPX,NOEJ                MYT05860
      LOGICAL XSEC,SUBS,EXPLO,AXES,LABL,IMPX,NOEJ                       MYT05870
      Q=-999.9                                                          MYT05880
      SENT=1                                                            MYT05890
      MFIL=((APPLICABLE FILE NUMBER))                                   MYT05900
      WRITE(MFIL) Q,SENT                                                MYT05910
      IF (.NOT. NOEJ) CALL FRAME                                        MYT05920
      CALL SHOWIT                                                       MYT05930
C                                                                       MYT05940
C   ************************************                                MYT05950
C   *  CHANGES MADE TO SPLGEN PROGRAM  *                                MYT05960
C   ************************************                                MYT05970
C                                                                       MYT05980
        READ(1,*) SIZE,LEVL                                             MYT05990
        CALL FRTCMS('CLRSCRN ')                                         MYT06000
C                                                                       MYT06010
CC                                                                      MYT06020
C * BEGIN INTERACTIVE SESSION *                                        MYT06030
CC ****************************                                       MYT06040
C                                                                       MYT06050
        IF(LEVL.NE.1) GO TO 30                                          MYT06060
    1   DO 2 I=1,10                                                     MYT06070
          IBUG(I)=C                                                     MYT06080
    2   CONTINUE                                                        MYT06090
        WRITE(7,130)                                                    MYT06100
    3   CONTINUE                                                        MYT06110
        READ (1,*) PRMP1                                                MYT06120
        IF(PRMP1.EQ.1) GO TO 5                                          MYT06130
        IF(PRMP1.EQ.2) GO TO 7                                          MYT06140
        WRITE(7,90)                                                     MYT06150
        GO TO 3                                                         MYT06160
    5   DENSTY=25.0                                                     MYT06170
        GO TO 40                                                        MYT06180
    7   DENSTY=40.0                                                     MYT06190
        GO TO 40                                                        MYT06200
   90 FORMAT(5X,'I NEED A 1,CR 2')                                      MYT06210
  130 FORMAT(3X,'THE DENSITY OF LINES CAN BE SET HIGHER THAN NORMAL',   MYT06220
     *'IF YOU INTEND'/3X,'TO DO EXPLODED VIEWGRAPHS.  NORMAL SETTING',  MYT06230
     *' IS RECOMMENDED FOR NOVICE USERS'//10X,                          MYT06240
     *'*************************************'/10X,                     MYT06250
     *'*    SETTING          FUNCTION KEY    *'/10X,                   MYT06260
     *'*    _______          ____________    *'/10X,                   MYT06270
```

```
     *'*  NORMAL DENSITY          1        * '/10X,                          MYT06280
     *'*  HIGHER DENSITY          2        * '/10X,                          MYT06290
     *'*************************************** ')                            MYT06300
  30  CALL INTER(DENSTY,IBUG)                                                MYT06310
  40  WRITE(6,9) SIZE,DENSTY,IBUG                                            MYT06320
                                                                             MYT06330
C     INTERMEDIARY/EXPERIENCED SET SIZE,DENSITY AND DEBUG SWITCHES           MYT06340
C     ************************************************************           MYT06350
C                                                                            MYT06360
      SUBROUTINE INTER(DENS,IBUG)                                            MYT06370
      COMMON /DEBUG/  IPRNT(30)                                              MYT06380
      DIMENSION IBUG(10)                                                     MYT06390
      CALL FRTCMS('CLRSCRN ')                                                MYT06400
      WRITE(7,130)                                                           MYT06410
   3  CONTINUE                                                               MYT06420
      READ (1,*) PRMP1                                                       MYT06430
      IF(PRMP1.EQ.1) GO TO 5                                                 MYT06440
      IF(PRMP1.EQ.2) GO TO 7                                                 MYT06450
      WRITE(7,90)                                                            MYT06460
      GO TO 3                                                                MYT06470
   5  DENS=25.0                                                              MYT06480
      GO TO 9                                                                MYT06490
   7  DENS=40.0                                                              MYT06500
   9  DO 10 I=1,30                                                           MYT06510
         IPRNT(I)=0                                                          MYT06520
  10  CONTINUE                                                               MYT06530
      WRITE(7,140)                                                           MYT06540
  12  WRITE(7,145)                                                           MYT06550
      READ(1,*) PRMP2                                                        MYT06560
      IF(PRMP2.EQ.0) GO TO 35                                                MYT06570
      IF(PRMP2.NE.1) GO TO 12                                                MYT06580
      CALL FRTCMS('CLRSCRN ')                                                MYT06590
      WRITE(7,150)                                                           MYT06600
      WRITE(7,155)                                                           MYT06610
      WRITE(7,160)                                                           MYT06620
      WRITE(7,165)                                                           MYT06630
      WRITE(7,170)                                                           MYT06640
      WRITE(7,175)                                                           MYT06650
      WRITE(7,180)                                                           MYT06660
  90  FORMAT(5X,'I NEED A 1,OR 2')                                           MYT06670
 100  FORMAT('1',10X,'SCAN LINE GENERATION - PART 1'/9X,                     MYT06680
     *'_____________________________'//)                                     MYT06690
 110  FORMAT(5X,'PLEASE REFER TO TABLE 2 OF YOUR USERS GUIDE'/5X,            MYT06700
     *'ENTER ANY ALPHANUMERIC KEY TO BEGIN DATA INPUT :'/5X,                 MYT06710
     *'*************************************')                             MYT06720
 130  FORMAT(3X,'THE DENSITY OF LINES CAN BE SET HIGHER THAN NORMAL',        MYT06730
     *'IF YOU INTEND'/3X,'TO DO EXPLODED VIEWGRAPHS.  NORMAL SETTING',       MYT06740
     *' IS RECOMMENDED FOR NOVICE USERS'//10X,                               MYT06750
```

```
     *'*************************************'/10X,                          MYTC6760
     *'*    SETTING           FUNCTION KEY   * '/10X,                       MYTC6770
     *'*                                     * '/10X,                       MYTC6780
     *'*  NORMAL DENSITY          1          * '/10X,                       MYTC6790
     *'*  HIGHER DENSITY          2          * '/10X,                       MYTC6800
     *'*************************************** ')                          MYTC6810
 140 FORMAT(10X,'DEBUGGING SWITCHES ARE AVAILABLE TO ASSIST'/10X,           MYTC6820
     *'THE USER BY PROVIDING INTERMEDIATE RESULTS'/10X,                     MYTC6830
     *'FOR THE DATAMEDIA TERMINAL WHEN A NEW TARGET'/10X,                   MYTC6840
     *'IS BEING INTRODUCED TO SCAN.  NOT RECOMMENDED'/10X,                  MYTC6850
     *'EXCEPT FOR THE MOST EXPERIENCED USERS')                              MYTC6860
 145 FORMAT(3X,'ENTER "1" TO SET DEBUG SWITCHES OR "0" TO CONTINUE',        MYTC6870
     *' WITH PROGRAM'/3X,'**************************************',         MYTC6880
     *'**********')                                                        MYTC6890
 150 FORMAT(2X,'2-ALL LINE GENERATION PRINTS'/2X,                          MYTC6900
     *'3-LINE GENERATION OF BOUNDING PLANES')                               MYTC6910
 155 FORMAT(2X,'4-LINE GENERATION OF ELLIPTIC CYLINDERS'/2X,               MYTC6920
     *'5-LINE GENERATION OF ELLIPSOIDS'/2X,                                 MYTC6930
     *'6-LINE GENERATION OF PARABOLOIDS')                                   MYTC6940
 160 FORMAT(2X,'7-LINE GENERATION OF ELLIPTIC CONES'/2X,                    MYTC6950
     *'8-LINE GENERATION OF PARABOLIC CYLINDERS'/2X,                        MYTC6960
     *'9-LINE GENERATION OF HYPERBOLOID 1'/2X                               MYTC6970
     *'10-LINE GENERATION OF HYPERBOLOID 2')                                MYTC6980
 165 FORMAT(2X,'11-LINE GENERATION OF PARABOLIC HYPERBOLOID')               MYTC6990
 170 FORMAT(2X,'12-PRINTS OF HYPERBOLIC BOUNDING PLANES'/2X,                MYTC7000
     *'13-PRINTS OF PARABOLIC BOUNDING PLANES'/2X,                          MYTC7010
     *'14-PRINTS OF ELLIPTIC BOUNDING PLANES'/2X)                           MYTC7020
 175 FORMAT(2X,'16-LISTING OF TARGET LINES'/2X,                            MYTC7030
     *'19-TARGET COMPONENT RETRIEVAL'/2X,                                   MYTC7040
     *'20-EXTENT,CENTER, AND NUMBER OF COMPONENTS')                         MYTC7050
 180 FORMAT('TO OBTAIN A SPECIFIC COMPONENT PRINT REFER TO THE ',           MYTC7060
     *'USER MANUAL'//5X,'ENTER UP TO TEN DEBUG SWITCHES WHEN PROMPTED',     MYTC7070
     *' BY A QUESTION MARK(?)'/5X,' DEBUG SWITHES ARE THE INTEGERS ',       MYTC7080
     *'LISTED ABOVE: ZERO(0)=NIL SETTING'/5X,'**********',                  MYTC7090
     *'*******************************************')                      MYTC7100
      READ (1,*) IBUG                                                      MYTC7110
      GO TO 45                                                             MYTC7120
  35  DO 40 I=1,10                                                         MYTC7130
      IBUG(I)=0                                                            MYTC7140
  40  CONTINUE                                                             MYTC7150
  45  DO 60 I=1,10                                                         MYTC7160
          IF (IBUG(I).EQ.0)  GO TO 60                                      MYTC7170
          IF (IBUG(I).LT.0)  GO TO 55                                      MYTC7180
             IB=IBUG(I)                                                    MYTC7190
             IPRNT(IB)=1                                                   MYTC7200
             GO TO 60                                                      MYTC7210
  55      IPRNT(22)=-IBUG(I)                                               MYTC7220
  60      CONTINUE                                                         MYTC7230
```

```
      IF (DENS.LE.0.0)  DENS=25.0                                        MYT07240
C     WRITE(7,66) SIZ,DENS,IBUG                                          MYT07250
C     WRITE(7,67) IPRNT                                                  MYT07260
C  66 FORMAT(2X,'SIZE=',2F10.2,2X,'IBUG SWITCH',516/2X,516)              MYT07270
C  67 FORMAT(2X,'IPRINT=',1016/2X,1016/2X,1016)                          MYT07280
      RETURN                                                             MYT07290
      END                                                                MYT07300
```

APPENDIX D

DEFAULT WARHEAD AND CASE FILLS

The following outline describes the default Case and Warhead Data files that are provided for use with the NPS version of SCAN:

1. CASE DATA - Encounter Geometry Summary.

Trajectory Type 1:	Fixed detonation point measured from target CG.	
Detonation Point:	X = 35.0 feet aft of CG	
	Y = 0.0 feet centered on CG.	
	Z = 25.0 feet above CG.	
Number of runs in Sample 5:		
Target Parameters:	Velocity	1000.0 feet/sec
	Roll Angle	0.0 degrees
	Pitch Angle	0.0 degrees
	Your Angle	0.0 degrees
	Sideslip	0.0 degrees
	Angle of Attack	0.0 degrees
Missile Parameters	Velocity	2000.0 feet/sec
	Pitch Angle	0.0 degrees
	Azimuth	0.0 degrees
	Aimpoint	Target CG
	Angle of Attack	5.0 degrees
	Sideslip	0.0 degrees
Encounter Altitude	10,000 feet	

2. WARHEAD DATA - Fragment, Fuzing and Blast Envelope Summary

a. Fragment Parameters

Number of Polar Zones 3

Number of Mass Classes 1

Polar Zone Number 1

Limiting Angles	50-60 degrees
Upper/Lower Velocity of Fragments	5000 ft/sec
Fragment Mass	100 grains
Fragment Number	2000
Fragment Initial Position from Center	5.0 feet
Fragment Material	Mild steel
Fragment Shape	Rectangular

Polar Zone Number 2

Limiting Angles	60-70 degrees
Upper/Lower Velocity of Fragments	4750 ft/sec
Fragment Mass	100 grains
Fragment Number	2000
Fragment Initial Position from Center	2.5 feet
Fragment Material	Mild Steel
Fragment Shape	Rectangular

Polar Zone Number 3

Limiting Angles	70-80 degrees
Upper/Lower Velocity of Fragments	4500 ft/sec
Fragment Mass	100 grains
Fragment Number	2000

Fragment Initial Position from Center	0.0
Fragment Material	Mild Steel
Fragment Shape	Rectangular

b. Fuzing Parameters

Fuze Type 0

Fuze Position 3.5 feet

Fuze Delay 0.0 seconds

Fuze Look Angle 75.0 degrees

Fuze Cut-off Range 25.0 feet

Radius of Missile Body 1.0 feet

Nose of Missile 5 feet in front of warhead

c. Blast Envelope

Fuselage blast radius 20.0 feet

Wing blast radius 25.0 feet

Cylinder length forward of CG 20.0 feet

Cylinder length aft of CG 20.0 feet

Starting point of wing cylinder 2.5 0.0 1.5

Endpoint of wing cylinder 20.0 5.0 1.5

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